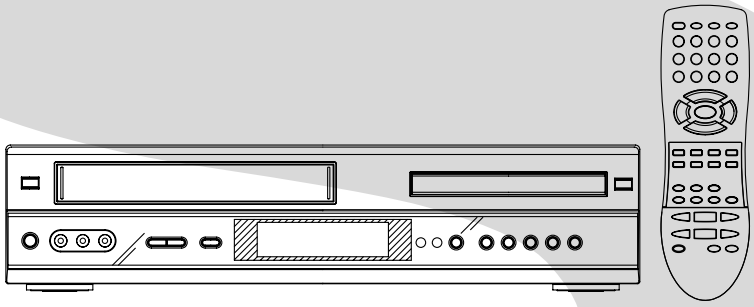
TOSHIBA

FILE NO. 810-200205

SERVICE MANUAL

DVD VIDEO PLAYER & VIDEO CASSETTE RECORDER

SD-V280



Jun.,2002 Ⓢ

LIMITED WARRANTY DVD VIDEO PLAYER (continued)

How to Obtain Warranty Service

(1) Refer to the troubleshooting guide in your owner's manual. This check list may solve your problem.
(2) In the U.S.A., only call the TACP toll free number 800-631-3811, or if in Hawaii or Canada see listing below within (30) days after you find a defective product or part.
(3) Arrange for the delivery of the product to the TACP/THI/TCL Authorized Service Station or TACP Return Center. Products shipped to the Service Station must be insured and safely and securely packed, preferably in the original shipping carton, and a letter explaining the defect and also a copy of the bill of sale or other proof of purchase must be enclosed.

In the Continental United States contact:

In Hawaii contact:
Toshiba Hawaii Inc.
327 Kamakee Street
Honolulu, HA 96814
(808)-521-5377

In Canada contact:
Consumer Electronics Group
191 McNabb Street
Markham, Ontario L3R 8H2
(905)-470-5400

Consumer Electronics Group
22171 Fraserwood Way
Richmond, B.C. V6W 1J5
(604)-303-2500

Consumer Electronics Group
1643 North Service Road
Dorval, QC H9P 1J1
(514)-856-4100

All warranties implied by state law, including the implied warranties of merchantability and fitness for a particular purpose, are expressly limited to the duration of the limited warranties set forth above. With the exception of any warranties implied by state law as hereby limited, the foregoing warranty is exclusive and in lieu of all other warranties, guarantees, agreements and similar obligations of manufacturer or seller with respect to the repair or replacement of any parts. In no event shall TACP/THI be liable for consequential or incidental damages.
No person, agent, distributor, dealer or company is authorized to change, modify or extend the terms of these warranties in any manner whatsoever. The time within which an action must be commenced to enforce any obligation of TACP/THI arising under the warranty or under any statute, or law of the United States or any state thereof, is hereby limited to ninety (90) days from the date you discover or should have discovered, the defect. This limitation does not apply to implied warranties arising under state law.
This warranty gives you specific legal rights and you may also have other rights which may vary from state to state. Some states do not allow limitation on how long an implied warranty lasts, when an action may be brought, or the exclusion or limitation of incidental or consequential damages, so the above provisions may not apply to you.

ATTENTION CANADIAN CONSUMERS:
Canadian consumers are requested to complete the special Canadian "Warranty Registration Form" enclosed, and forward this completed form with a copy of bill of sale to TOSHIBA OF CANADA to "Register and Validate" their warranty. Product must be purchased from an Authorized Canadian Dealer. Products purchased in the U.S.A. and used in Canada are not covered by these warranties.

IMPORTANT: PACKING AND SHIPPING INSTRUCTION
When you send the product to a Service Station, you must use the original carton box and packing material, then insert the original carton box containing the unit into another carton using more packing material.

TOSHIBA

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Printed in Thailand

TOSHIBA

DVD VIDEO PLAYER & VIDEO CASSETTE RECORDER

SD-V280

OWNER'S MANUAL

VHS Hi-Fi

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79077192 ©2002 Toshiba Corporation
This device does not tape-recorded copy protected DVD Video Discs.

IMPORTANT SAFEGUARDS

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: **TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, do not expose this appliance to rain or moisture.**

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by the partly responsible for compliance with the FCC Rules could void the user's authority to operate this equipment.

CAUTION: THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

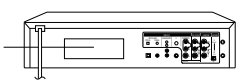
TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS USER'S GUIDE CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking
The rating sheet and the safety caution are on the rear of the unit.

CERTIFICATION: COMPLIES WITH FDA RADIATION PERFORMANCE STANDARDS, 21 CFR SUBCHAPTER J.



IMPORTANT SAFEGUARDS

1. **READ INSTRUCTIONS**
   All the safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS**
   The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS**
   All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS**
   All operating and use instructions should be followed.
5. **CLEANING**
   Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning the exterior cabinet only.
6. **ATTACHMENTS**
   The manufacturer of this unit does not make any recommendations for attachments, as they may cause hazards.
7. **WATER AND MOISTURE**
   Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.
8. **ACCESSORIES**
   Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit.

PORTABLE CART WARNING
(symbol provided by RETAC)

S3125A

8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. **VENTILATION**
   Slots and openings in the cabinet back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided and/or the manufacturer's instructions have been adhered to.
10. **POWER SOURCE**
    This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.
11. **GROUNDING OR POLARIZATION**
    This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug, if your unit is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet.Do not defeat the safety purpose of the grounding-type plug.
12. **POWER-CORD PROTECTION**
    Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

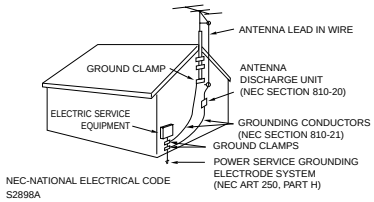
IMPORTANT SAFEGUARDS

13. **LIGHTNING**
To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.
14. **POWER LINES**
An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
15. **OVERLOADING**
Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.
16. **OBJECT AND LIQUID ENTRY**
Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.
17. **OUTDOOR ANTENNA GROUNDING**
If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded to provide some protection against voltage surges and built-up static charges, Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
18. **SERVICING**
Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
19. **DAMAGE REQUIRING SERVICE**
Unplug this unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:
    a. When the power-supply cord or plug is damaged.
    b. If liquid has been spilled, or objects have fallen into the unit.
    c. If the unit has been exposed to rain or water.
    d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
    e. If the unit has been dropped or the cabinet has been damaged.
    f . When the unit exhibits a distinct change in performance, this indicates a need for service.
20. **REPLACEMENT PARTS**
When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original part.
Unauthorized substitutions may result in fire, electric shock or other hazards.
21. **SAFETY CHECK**
Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
22. **HEAT**
The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.
23. **DISC TRAY**
Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.
24. **CONNECTING**
When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

IMPORTANT SAFEGUARDS / Power Source

25. **LASER BEAM**
Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.
26. **DISC**
Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.
27. **NOTE TO CATV SYSTEM INSTALLER**
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

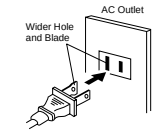
EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE


ANTENNA LEAD IN WIRE
GROUND CLAMP
ANTENNA DISCHARGE UNIT (NEC SECTION 810-20)
ELECTRIC SERVICE EQUIPMENT
GROUNDING CONDUCTORS (NEC SECTION 810-21)
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM (NEC ART 250, PART H)

NEC-NATIONAL ELECTRICAL CODE S2898A

CONDENSATION
Moisture will form in the operating section of the DVD/VCR if the player is brought from cool surroundings into a warm room or if the temperature of the room rises suddenly. When this happens, the DVD/VCR's performance will be impaired.
To prevent this, let the DVD/VCR stand in its new surroundings for about an hour before switching it on, or make sure that the room temperature rises gradually.
Condensation may also form during the summer if the DVD/VCR is exposed to the breeze from an air conditioner. In such cases, change the location of the DVD/VCR.

Power source



Polarized AC Cord Plug
(One blade is wider than the other.)

TO USE AC POWER SOURCE
Use the AC polarized line cord provided for operation on AC. Insert the AC cord plug into a standard 120V 60Hz polarized AC outlet.

Notes:
- Never connect the AC line cord plug to other than the specified voltage (120V 60Hz). Use the attached power cord only.
- If the polarized AC cord does not fit into a non-polarized AC outlet, do not attempt to file or cut the blade. It is the user's responsibility to have an electrician replace the obsolete outlet.
- If you cause a static discharge when touching the unit and the unit fails to function, simply unplug the unit from the AC outlet and plug it back in. The unit should return to normal operation.

Precautions

Notes on handling

- When shipping the DVD/VCR, the original shipping carton and packing materials come in handy. For maximum protection, repack the unit as it was originally packed at the factory.
- Do not use volatile liquids, such as insect spray, near the DVD/VCR. Do not leave rubber or plastic products in contact with the DVD/VCR for a long time. They will leave marks on the finish.
- The top and rear panels of the DVD/VCR may become warm after a long period of use. This is not a malfunction.
- When the DVD/VCR is not in use, be sure to remove the disc and the video cassette turn off the power.
- If you do not use the DVD/VCR for a long period, the unit may not function properly in the future. Turn on and use the DVD/VCR occasionally.

Notes on locating

- Place the DVD/VCR on a level surface. Do not use it on a shaky or unstable surface such as a wobbling table or inclined stand. The loaded disc or the video tape may come off the proper position and cause damage to the DVD/VCR.
- When you place this DVD/VCR near a TV, radio, or VCR, the playback picture may become poor and the sound may be distorted. In this case, place the DVD/VCR away from the TV, radio, or VCR.

Notes on cleaning

Use a soft, dry cloth for cleaning.
- For stubborn dirt, soak the cloth in a weak detergent solution, wring well and wipe. Use a dry cloth to wipe it dry.
  Do not use any type of solvent, such as thinner and benzine, as they may damage the surface of the DVD/VCR.
- If you use a chemical saturated cloth to clean the unit, follow that product's instructions.

To obtain a clear picture

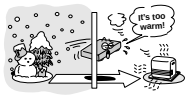
The DVD/VCR is a high technology, precision device. If the video head, the head dram, the optical pick-up lens and disc drive parts are dirty or worn down, the picture quality becomes poor. To obtain a clear picture, we recommend regular inspection and maintenance (cleaning or parts replacement) every 1,000 hours of use depending on the operating environment. For details, contact your nearest dealer.

Notes on moisture condensation

Moisture condensation damages the DVD/VCR. Please read the following carefully.

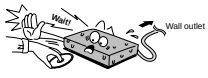
Moisture condensation occurs, for example, when you pour a cold drink into a glass on a warm day. Drops of water form on the outside of the glass. In the same way, moisture may condense on the head dram or the optical pick-up lens inside this unit, one of the most crucial internal parts of the DVD/VCR.

■ **Moisture condensation occurs during the following cases.**
- When you bring the DVD/VCR directly from a cold place to a warm place.
- When you use the DVD/VCR in a room where you just turned on the heater, or a place where the cold wind from the air conditioner directly hits the unit.
- In summer, when you use the DVD/VCR in a hot and humid place just after you move the unit from an air conditioned room.
- When you use the DVD/VCR in a humid place.



■ **Do not use the DVD/VCR when moisture condensation may occur.**

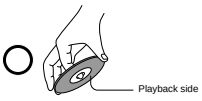
If you use the DVD/VCR in such a situation, it may damage discs and internal parts. Remove the disc or the video tape, connect the power cord of the DVD/VCR to the wall outlet, turn on the DVD/VCR, and leave it for two or three hours. After two or three hours, the DVD/VCR will have warmed up and evaporated any moisture. Keep the DVD/VCR connected to the wall outlet and moisture condensation will seldom occur.



Notes on discs

On handling discs

- Do not touch the playback side of the disc.



- Do not attach paper or tape to discs.

On cleaning discs

- Fingerprints and dust on the disc cause picture and sound deterioration. Wipe the disc from the center outwards with a soft cloth. Always keep the disc clean.

- If you cannot wipe off the dust with a soft cloth, wipe the disc lightly with a slightly moistened soft cloth and finish with a dry cloth.
- Do not use any type of solvent such as thinner, benzine, commercially available cleaners or antistatic spray for vinyl LPs. It may damage the disc.

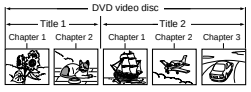
On storing discs

- Do not store discs in a place subject to direct sunlight or near heat sources.
- Do not store discs in places subject to moisture and dust such as a bathroom or near a humidifier.
- Store discs vertically in a case. Stacking or placing objects on discs outside of their case may cause warping.

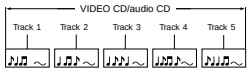
Structure of disc contents

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs and audio CDs are divided into tracks.

DVD video disc



VIDEO CD/audio CD



Each title, chapter or track is assigned a number, which is called "title number", "chapter number" or "track number" respectively.
There may be discs that do not have these numbers.

Notes on copyright

It is forbidden by law to copy, broadcast, show, broadcast on cable, play in public, and rent copyrighted material without permission.

This device does not tape-record copy protected DVD Video Discs.
The device is not to be used for copying copyrighted content without the express written permission of the copyright owner.
Obtaining such permission is the sole responsibility of the user.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes on discs (continued)

About this owner's manual

This owner's manual explains the basic instructions of this DVD/VCR. Some DVD video discs are produced in a manner that allows specific or limited operation during playback. As such, the DVD/VCR may not respond to all operating commands. This is not a defect in the DVD/VCR. Refer to instruction notes of discs.

"⃠" may appear on the TV screen during operation.
A "⃠" means that the operation is not permitted by the DVD/VCR or the disc.

Notes on region numbers

The region number of this DVD/VCR is 1. If region numbers, which stand for their playable area, are printed on your DVD video disc and you do not find ⓲ or ⓵, disc playback will not be allowed by the player. (In this case, the DVD/VCR will display a message on-screen.)

On VIDEO CDs

This DVD/VCR supports VIDEO CDs equipped with the PBC (Version 2.0) function. (PBC is the abbreviation of Playback Control.) You can enjoy two playback variations depending on types of discs.

- **VIDEO CD not equipped with PBC function (Version 1.1)**
  Sound and movie can be played on this DVD/VCR in the same way as an audio CD.
- **VIDEO CD equipped with PBC function (Version 2.0)**
  In addition to operation of a VIDEO CD not equipped with the PBC function, you can enjoy playback of interactive software with search function by using the menu displayed on the TV screen (Menu Playback). Some of the functions described in this owner's manual may not work with some discs.

Playable discs

This DVD/VCR can play the following discs.

	Disc Mark	Contents	Disc Size	Maximum playback time
DVD video discs	DVD VIDEO	Audio + video (moving pictures)	12 cm	Approx. 4 hours (single sided disc)
				Approx. 8 hours (double sided disc)
	DVD VIDEO		8 cm	Approx. 80 minutes (single sided disc)
				Approx. 160 minutes (double sided disc)
VIDEO CDs	DIGITAL VIDEO	Audio + video (moving pictures)	12 cm	Approx. 74 minutes
			8 cm	Approx. 20 minutes
Audio CDs	DIGITAL AUDIO	Audio	12 cm	Approx. 74 minutes
			8 cm (CD single)	Approx. 20 minutes

The following discs are also available.
● CD-R
● CD-RW
CD-R/RW discs recorded by CD-DA method can be played. Some CD-R/RW discs may be incompatible.

- You cannot play discs other than those listed above.
- You cannot play discs of DVD-RAM, DVD-RW, etc., or non standardized discs even if they may be labeled as above.
- This DVD/VCR uses the NTSC color system, and cannot play DVD video discs recorded in any other color system (PAL, SECAM, etc.).

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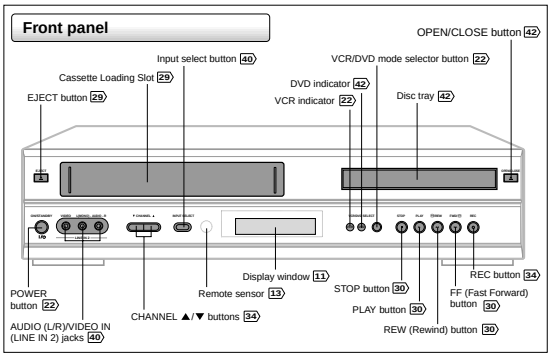
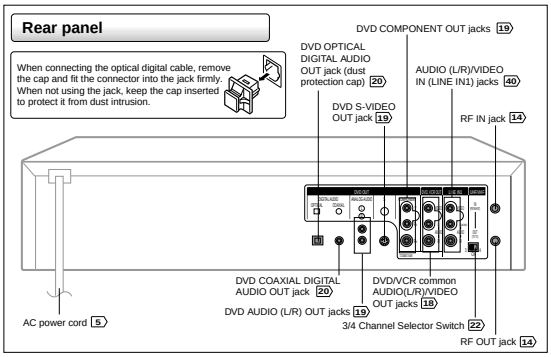
Identification of Controls

See the page in ▭ for details.

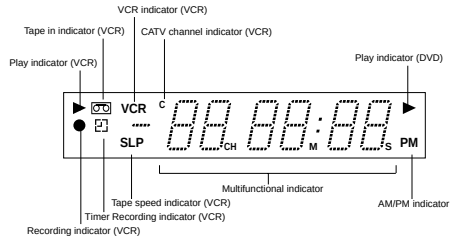
Front panel



Rear panel


When connecting the optical digital cable, remove the cap and fit the connector into the jack firmly. When not using the jack, keep the cap inserted to protect it from dust intrusion.
DVD COMPONENT OUT jacks 19
DVD OPTICAL DIGITAL AUDIO OUT jack (dust protection cap) 20
AUDIO (L/R)/VIDEO IN (LINE IN1) jacks 40
DVD S-VIDEO OUT jack 19
RF IN jack 14
DVD COAXIAL DIGITAL AUDIO OUT jack 20
DVD/VCR common AUDIO(L/R)/VIDEO OUT jacks 18
DVD AUDIO (L/R) OUT jacks 19
3/4 Channel Selector Switch 22
AC power cord 5
RF OUT jack 14

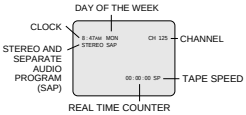
Display window



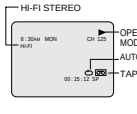
VCR operation Status

Press **CALL** to display the information on the screen.
To cancel the display, press **CALL** again.

While watching TV



While operating a tape



Symbol Marks

Recording : ●
Rec/Pause : ●II
Play : ▶
Stop : ■
Eject : ⏏
⮌ : Auto Repeat

DVD operation Status

Each time you press **DISPLAY**, the on-screen display changes as follows.

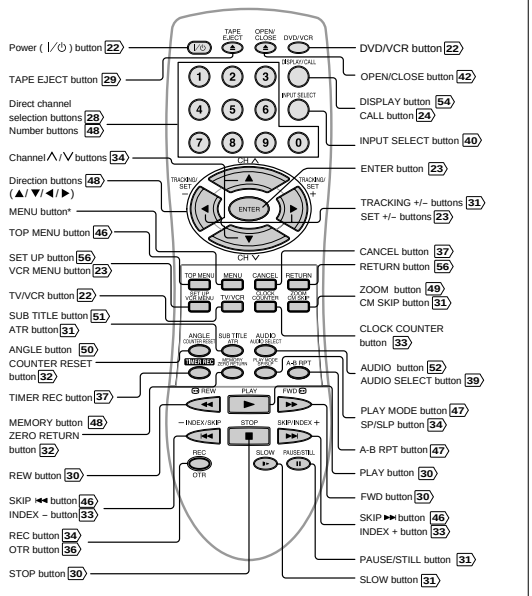
- T : Title number (Track number)
- C : Chapter number
- : Elapsed (remaining) time of the current title
- : Audio setting
- : Subtitle setting
- : Angle setting
- : E.A.M. (Enharced Audio Mode) setting
- : To zoom a picture
- : Audio Out Select setting
- : To stop playback
- : Playback starts from the beginning of the current chapter or track.
- : Fast reverse playback
- : To start playback
- : Fast forward playback
- : To locate succeeding chapters or tracks.
- : To begin slow motion playback
- : To pause playback
- : To turn off the display

Data transfer rate (Mbit/s)
CD TEXT

Identification of Controls (continued)

The instructions in this manual describe the functions on the remote control. See the page in ▭ for details.

Remote control



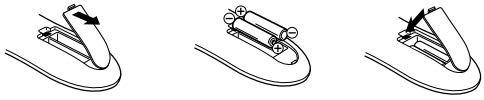
*** MENU button**
Use the MENU button to display the menu included on many DVD video discs. To operate a menu, follow the instructions in "Locating a title using the top menu." 46

Inserting Batteries

1 Open the battery compartment cover in the direction of the arrow.

2 Install two "AAA" batteries (supplied), paying attention to the polarity diagram in the battery compartment.

3 Replace the compartment cover.



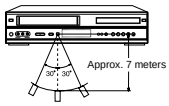
Battery precautions

The precautions below should be followed when using batteries in this device:
1. Use only the size and type of batteries specified.
2. Be sure to follow the correct polarity when installing the batteries as indicated in the battery compartment. Reversed batteries may cause damage to the device. To avoid a potential short circuit, insert the "–" end first.
3. Do not mix different types of batteries together (e.g. Alkaline and Carbon-zinc) or old batteries with fresh ones.
4. If the device is not to be used for a long period of time, remove the batteries to prevent damage or injury from possible battery leakage.
5. Do not try to recharge batteries not intended to be recharged; they can overheat and rupture. (Follow battery manufacturer's directions.)

Remote control basics

- Press **POWER** (I/⏻) to turn the DVD/VCR on or off.
- Select your desired operating mode (DVD or VCR) using **DVD/VCR**. (DVD or VCR indicator on the front panel will show you which mode is selected.)
- Tap **CH** ∧ or **CH** ∨ to move through the channels one channel at a time.
- The **CH** ∧/∨ (▲/▼) and **SET** +/– (◀ / ▶) are also used to navigate on-screen menu system.
- You can directly access specific channels using **Number buttons**.
- Each press of **DVD/VCR** on the remote control, switches the screen between the VCR screen (VCR mode) and the DVD screen (DVD mode).

Operation
- Aim the remote control at the remote sensor and press control buttons to operate.
- Operate the remote control within 30° angle on either side of the remote sensor, up to a distance of Approx. 7 meters.



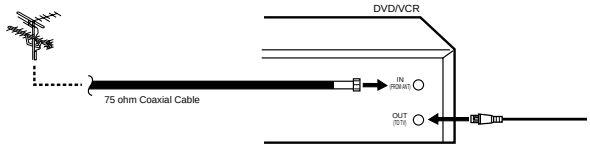
Antenna connections

If you are using an antenna system, follow these instructions. If you are a cable (CATV) subscriber,skip ahead to page for the proper connections.

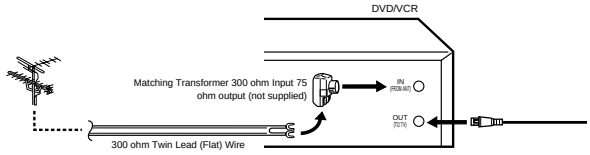
Antenna to DVD/VCR connection

The DVD/VCR must be connected "between" the antenna and the TV. First, disconnect the antenna from the TV and connect it to the DVD/VCR. Then connect the DVD/VCR to the TV. Below are 3 common methods of connecting an antenna system to a DVD/VCR. Find the type of antenna system you are using and follow the connection diagram.

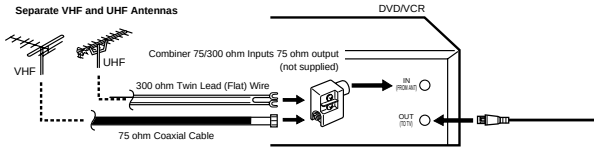
1 **Combination VHF/UHF Antenna with 75 ohm Coaxial Cable**



2 **Combination VHF/UHF Antenna with 300 ohm Twin Lead (Flat) Wire**



3 **Separate VHF and UHF Antennas**



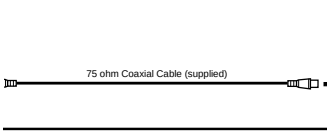
Note: If both VHF and UHF antennas have 300 ohm twin lead (flat) wires, use a combiner having two 300 ohm inputs and one 75 ohm output.

Notes:
- A clear picture will not be obtained by the DVD/VCR unless the antenna signal is good. Connect the antenna to the DVD/VCR properly.
- For better quality recording, an indoor antenna or a telescopic antenna is not recommended. The use of an outdoor type antenna is required.
- If you are not sure about the connection, please refer to qualified service personnel.

DVD/VCR to TV connection

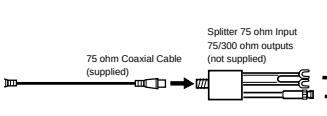
After you have connected the antenna to the DVD/VCR, you must connect the DVD/VCR to the TV. Below are 3 common methods of connecting your DVD/VCR to a TV. Find the type of TV you are using and follow the connection diagram.

This DVD/VCR has a single 75 ohm output for connection to a TV. If your TV has separate VHF and UHF antenna inputs (numbers 2 and 3 below), use a splitter to connect the DVD/VCR to the TV for VHF and UHF reception.



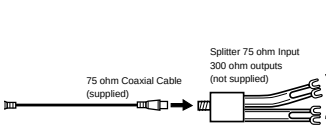
Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with single 75 ohm VHF/UHF antenna input



Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with 300 ohm UHFand 75 ohm VHF antenna inputs



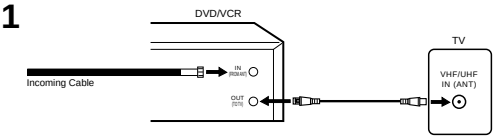
Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with 300 ohm UHF and 300 ohm VHF antenna inputs

CATV (CABLE TV) connections

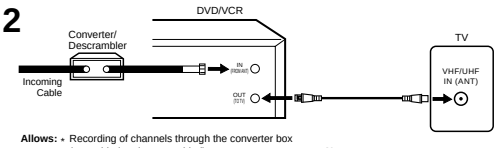
Many cable companies offer services permitting reception of extra channels including pay or subscription channels. This DVD/VCR has an extended tuning range and can be tuned to most cable channels without using a cable company supplied converter box, except for those channels which are intentionally scrambled. If you subscribe to a special channel which is scrambled, you must have a descrambler box for proper reception.

1



Allows:
- Recording of nonscrambled channels.
- Use of the programmable timer.
- Recording of one channel while watching another.

2

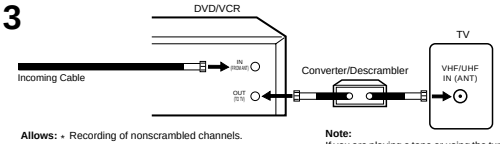


Allows:
- Recording of channels through the converter box (scrambled and unscrambled).
- Using the programmable timer to record only the channel selected at the converter box.

Prevents:
- Recording one channel while watching another.
- Using the DVD/VCR tuner to select channels.

Note:
To record from converter/descrambler, DVD/VCR tuner must be tuned to the converter output channel, usually channel 3 or 4.

3



Allows:
- Recording of nonscrambled channels.
- Use of the programmable timer.
- Recording an unscrambled channel while watching any channel selected at the converter box.

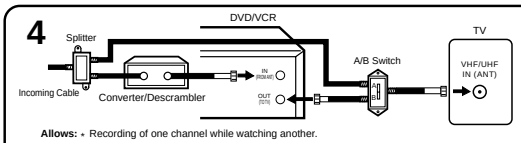
Prevents: Recording scrambled channels.

Note:
If you are playing a tape or using the tuner built into the DVD/VCR, the converter must be set to the video channel output of the DVD/VCR (either 3 or 4).

Note: Whenever a Converter/Descrambler box is placed before the DVD/VCR, you must tune the DVD/VCR to the output of the Converter/Descrambler box, usually channel 3 or 4.

IMPORTANT: Make sure the TV/CATV menu option is set to the "CATV" mode.
This DVD/VCR cannot receive scrambled programs since it does not contain a descrambler. In order to receive scrambled programs, your existing descrambler must be used. Descrambler boxes are available from cable companies. Consult your local cable company for more information concerning connection to their descrambler equipment. There are many ways to connect your DVD/VCR to a cable system. Below are six common methods of connection.

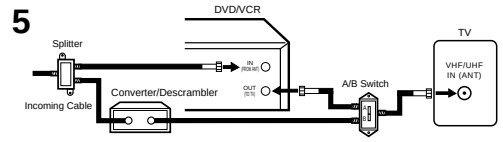
4



Allows:
- Recording of one channel while watching another.
- Using the programmable timer to record only the channel selected at the converter box.
- Recording of all channels through the converter box.

Prevents:
- Watching scrambled channels while recording another channel.
- Using the DVD/VCR tuner to select channels.

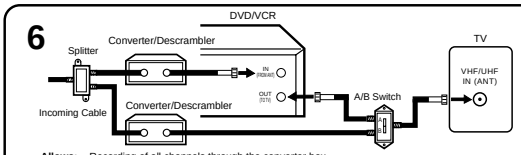
5



Allows:
- Recording of nonscrambled channels.
- Recording of one channel while watching another.
- Watching premium channels through the converter while recording nonscrambled channels.
- Using the programmable timer.

Prevents: Recording scrambled channels.

6



Allows:
- Recording of all channels through the converter box.
- Recording a scrambled or unscrambled channel while watching another (scrambled or unscrambled) channel.
- Using the programmable timer to record only the channel selected at the converter box.

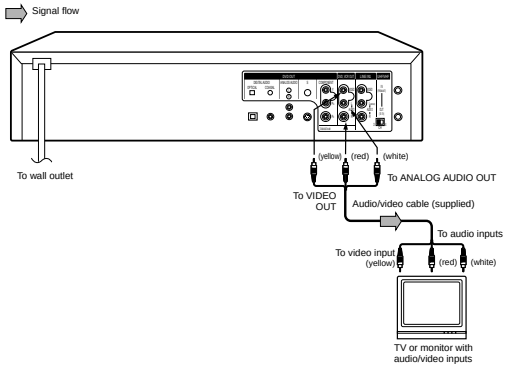
Prevents: Using the DVD/VCR tuner to select channels.

Connecting to a TV

Connect the DVD/VCR to your TV.

For details of output sound, see 52.

Connecting to a TV

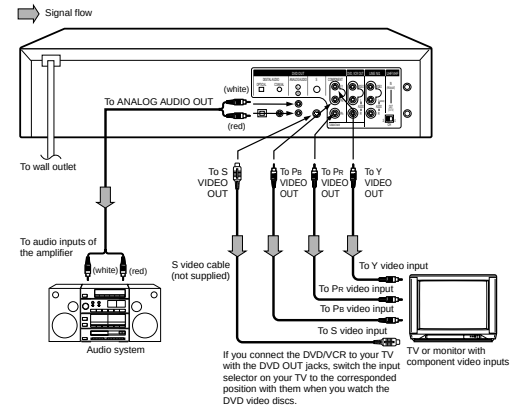


- Make the following setting.

On-screen display	Select:	Page
"Audio Out Select"	"Analog 2ch"	56, 58

Notes:
- Refer to the owner's manual of the connected TV as well.
- When you connect the DVD/VCR to your TV, be sure to turn off the power and unplug both units from the wall outlet before making any connections.
- If your television set has one audio input, connect the left and right audio outputs of the DVD/VCR to a Y cable adapter (not supplied) and then connect to your TV.
- Connect the DVD/VCR directly to your TV. If you connect the DVD/VCR to a VCR, TV/VCR combination or video selector, the playback picture may be distorted as DVD video discs are copy protected.

Connecting to an audio system and TV equipped with S video input/component video inputs



If you connect the DVD/VCR to your TV with the DVD OUT jacks, switch the input selector on your TV to the corresponded position with them when you watch the DVD video discs.

Component video (ColorStream®) outputs/inputs
Some TVs or monitors are equipped with component video inputs. Connecting to these inputs allows you to enjoy higher quality picture playback.
Actual labels for component video inputs may vary depending on the TV manufacturer. (ex. Y, R-Y, B-Y or Y, C_B, C_R)
In some TVs or monitors, the color levels of the playback picture may be reduced slightly or the tint may change. In such a case, adjust the TV or monitor for optimum performance.

- Make the following setting.

On-screen display	Select:	Page
"Audio Out Select"	"Analog 2ch"	56, 58

Notes:
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD/VCR to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- If you place the DVD/VCR near a tuner or radio, the radio broadcast sound might be distorted. In this case, place the DVD/VCR away from the tuner and radio.
- The output sound of the DVD/VCR has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD/VCR's power cord. If you leave the amplifier power on, the speakers may be damaged.

Connecting to optional equipment

You can enjoy high quality dynamic sounds of DVD video discs or audio CDs by connecting the DVD/VCR to optional audio equipment.

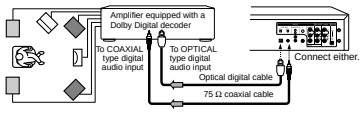
For connection to your TV, see "Connecting to a TV" 18 19.
For details of output sound, see 52.

: Front speaker
: Rear speaker
: Sub woofer
: Center speaker
⇨ : Signal flow

Connecting to an amplifier equipped with a Dolby Digital decoder

Dolby Digital
Dolby Digital is the surround sound technology used in theaters showing the latest movies, and is now available to reproduce this realistic effect in the home. You can enjoy motion picture and live concert DVD video discs with this dynamic realistic sound by connecting the DVD/VCR to a 6 channel amplifier equipped with a Dolby Digital decoder or Dolby Digital processor. If you have a Dolby Pro Logic Surround decoder, you will obtain the full benefit of Pro Logic from the same DVD movies that provide full 5.1-channel Dolby Digital soundtracks, as well as from titles with the Dolby Surround mark.

Manufactured under license from Dolby Laboratories. "Dolby" "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories. Confidential unpublished works. ©1992-1997 Dolby Laboratories. All rights reserved.


Amplifier equipped with a Dolby Digital decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
Connect either.
75 Ω coaxial cable

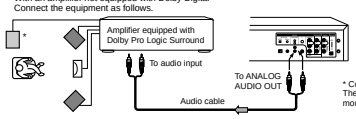
- Use DVD video discs encoded via the Dolby Digital recording system.
- Make the following setting.

On-screen display	Select:	Page
"Audio Out Select"	"Bitstream"	56 58
Recording system	D	52

Connecting to an amplifier equipped with Dolby Pro Logic Surround

Dolby Pro Logic Surround
You can enjoy the dynamic realistic sound of Dolby Pro Logic Surround by connecting an amplifier and speaker system (right and left front speakers, a center speaker, and one or two rear speakers).

- With an amplifier equipped with Dolby Digital
  Connect the equipment the same way as described in "Connecting to an amplifier equipped with a Dolby Digital decoder." Refer to that amplifier's owner's manual and set the amplifier so you can enjoy Dolby Pro Logic Surround sound.
- With an amplifier not equipped with Dolby Digital
  Connect the equipment as follows.



- Make the following setting.

On-screen display	Select:	Page
"Audio Out Select"	"Analog 2ch"	56 58

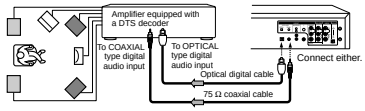
Be sure to set "Audio Out Select" to "Analog 2ch" when you enjoy sounds of Dolby Pro Logic Surround using this connection.

* Connect one or two rear speakers.
The output sound from the rear speakers will be monaural even if you connect two rear speakers.

Connecting to an amplifier equipped with a DTS decoder

Digital Theater Systems (DTS)
DTS is a high quality surround technology used in theaters and now available for home use, on DVD video discs or audio CDs.
If you have a DTS decoder or processor, you can obtain the full benefit of 5.1 channel DTS encoded sound tracks on DVD video discs or audio CDs.

"DTS" and "DTS Digital Surround" are trademarks of Digital Theater Systems, Inc.


Amplifier equipped with a DTS decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
Connect either.
75 Ω coaxial cable

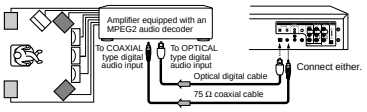
- Use DVD video discs or audio CDs encoded via the DTS recording system.
- Make the following setting.

On-screen display	Select:	Page
"Audio Out Select"	"Bitstream"	56 58
Recording system	DTS	52

Warning
- When you are connecting (via the BITSTREAM/PCM AUDIO OUT jack) an AV decoder that does not have Dolby Digital, Digital Theater Systems (DTS) or MPEG2 decoding function, be sure to set "Audio Out Select" to "PCM" from the on-screen displays 56 58. Otherwise, high volume sound may damage your hearing as well as the speakers.
- When playing DTS-encoded discs (DVD/VCR), excessive noise may be output from the analog stereo jacks. To avoid possible damage to the audio system, you should take proper precautions when the ANALOG AUDIO OUT (L/R) jacks of the DVD/VCR are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1 channel DTS Digital Surround™ decoder system must be connected to the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR.

Connecting to an amplifier equipped with an MPEG2 audio decoder

MPEG2 sound
You can enjoy motion picture and live concert DVD video discs with dynamic realistic sound by connecting an amplifier equipped with an MPEG2 audio decoder or MPEG2 audio processor.

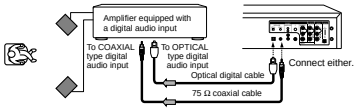

Amplifier equipped with an MPEG2 audio decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
Connect either.
75 Ω coaxial cable

- Use DVD video discs encoded via the MPEG2 recording system.
- Make the following setting.

On-screen display	Select:	Page
"Audio Out Select"	"Bitstream"	56 58
Recording system	MPEG	52

Connecting to an amplifier equipped with a digital audio input

2 channel digital stereo
You can enjoy the dynamic sound of 2 channel digital stereo by connecting an amplifier equipped with a digital audio input and speaker system (right and left front speakers).


Amplifier equipped with a digital audio input
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
Connect either.
75 Ω coaxial cable

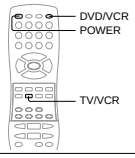
- Make the following setting.

On-screen display	Select:	Page
"Audio Out Select"	"PCM"	56 58

Notes:
- DO NOT connect the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR to the AC-3 RF input of a Dolby Digital Receiver. This input on your A/V Receiver is reserved for Laserdisc use only and is incompatible with the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR.
- Connect the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR to the "OPTICAL" or "COAXIAL" input of a Receiver or Processor.
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD/VCR to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- The output sound of the DVD/VCR has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD/VCR's power cord. If you leave the amplifier power on, the speakers may be damaged.

Setting the video channel

When a TV is connected with the 75 ohm coaxial cable only.
To view playback of a recorded tape or DVD disc, or to watch a program selected by the VCR's channel selector, the TV must be set to channel 3 or 4 (video channel).



Setting the video channel

1 **Press POWER to turn on the DVD/VCR.**

I/⏻

2 **Press DVD/VCR to select the VCR mode.**

DVD/VCR — The VCR indicator on the front panel will light.

3 **Set the 3/4 Channel selector switch on the rear panel to CH 3 or 4.**

3 4 CH

4 **Turn ON the TV and set to CH 3 or 4 to correspond with the channel selected in step 3.**

5 **Press TV/VCR to select the VCR position.**

TV/VCR — The VCR indicator will appear in the display window.

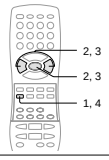
6 Select any channel to receive a TV station in your area. The channel number will appear on the screen for about 4 seconds.

■For a push-button TV tuner
If CH 3 or 4 corresponding to the video channel cannot be tuned on your TV, proceed as follows: set the VCR 3/4 channel selector and the TV to CH 3 or 4, play back a prerecorded tape and tune the TV to receive a sharp color picture from the video cassette recorder. Refer to your TV owner's manual for details.

Notes:
- **If the unit does not operate properly, or No key operation (by the unit and/or the remote control):** Static electricity, etc., may affect the player's operation. Disconnect the AC power cord once, then connect it again.
- When you turn on the DVD/VCR which has disc inside, DVD playback will start automatically.
  If the operating mode was VCR, when you turned on the DVD/VCR which has disc inside, it will play back automatically and stop after about 5 minutes.
- During the DVD playback if you change the operating mode from DVD to VCR, the DVD will continue to play back the disc and stop after about 5 minutes.

Setting the language

You can choose from three different languages (English, French and Spanish) for the on-screen displays.



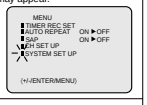
Setting the language

Preparation:
- Turn ON the TV and set to the video input mode.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)

1 **Press VCR MENU.**

SET UP
VCR MENU

If you use the unit for the first time and press **VCR MENU**, instead of the main menu screen on the right the "SYSTEM SET UP" menu screen in step **2** may appear.



2 **Press SET + or – to select "LANGUAGE", then press ENTER.**

3 **Press SET + or – to select the desired language: English (ENGLISH), Spanish (ESPAÑOL) or French (FRANCAIS), then press ENTER.**

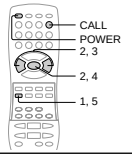
4 **Press VCR MENU until the MENU screen is cleared.**

SET UP
VCR MENU

Notes:
- Both the VCR and the DVD have their own menu option 56.
- If no buttons are pressed for more than 60 seconds, the VCR MENU screen will return to normal TV-operation automatically.

Clock setting

The Auto Clock function will automatically set the built-in clock (Month, Day, Year and Time) when the DVD/VCR is connected to an Antenna or Cable system and it is turned off. As the DVD/VCR searches for a receivable station in your area and it receives a broadcast signal for Auto Clock, the Auto Clock needs several minutes to set itself.



Auto clock setting

Preparation:
- Turn ON the TV and set to the video input mode.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)

1 **Connect the Antenna or Cable system.**
- If you use a cable box, turn it on.

2 **Plug the AC Power cord to the AC outlet.**

3 **Make sure the DVD/VCR is turned off.**
- If you press **POWER**, the Auto Clock set is not effective.

4 **Wait at least three minutes and press POWER.**

5 **Press CALL to check the clock on the screen.**

DISPLAY/CALL

6 **If the clock is not set, check the antenna condition. The auto clock may not function properly if the reception condition is not good.**

Auto clock adjustment

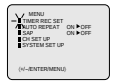
The auto clock adjustment will be performed at 12:00 PM everyday if you turn off the DVD/VCR.
- If you use a cable box and you want auto clock adjustment to be performed, the cable box must be left on.
- The auto clock adjustment is not effective when there is a difference of more than 5 minutes exists between the built-in clock time and the actual time.

To set auto clock to off

When shipped from factory the AUTO CLOCK is set to "ON". But if you do not want auto clock set (Adjustment):

1 **Press VCR MENU.**

SET UP
VCR MENU



2 **Press SET + or – to select "SYSTEM SET UP", then press ENTER.**

3 **Press SET + or – to select "AUTO CLOCK".**

4 **Press ENTER to select "OFF".**

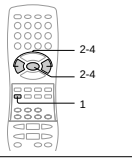
5 **Press VCR MENU repeatedly to return to the normal screen.**

SET UP
VCR MENU

- When the AUTO CLOCK is set to "OFF", the Auto Clock adjustment does not function.
- Set the clock manually 26.

Clock setting (continued)

If the auto clock process did not set the date and time correctly, you must set them manually for timer recordings and daylight saving time.



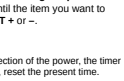
Manual clock setting

EXAMPLE: Setting the clock to "8:30 AM" March, 23 (SAT), 2002.

1 **Press VCR MENU.**

SET UP
VCR MENU

2 **Press SET + or – to select "SYSTEM SET UP", press ENTER.**



3 **Press SET + or – to select "CLOCK SET", then press ENTER.**

4 **Press SET + or – to set the month, then press ENTER.**

5 **Set the day, year and time as in step 4.**

6 **After setting the clock, date and time starts functioning automatically.**

■ **To make corrections any time during the process**
Press **CANCEL** repeatedly until the item you want to change blinks, then press **SET +** or **–**.

Note:
After a power failure or disconnection of the power, the timer settings will be lost. In this case, reset the present time.

To set standard time

In the rare event that you live within broadcast range of two stations in two different time zones, the DVD/VCR may recognize the wrong station for the Auto Clock set.
To correct the situation:

1 **Press VCR MENU.**

SET UP
VCR MENU

2 **Press SET + or – to select "SYSTEM SET UP", then press ENTER.**

3 **Press SET + or – to select "STANDARD TIME", then Press ENTER.**

4 **Press SET + or – to select your time zone, then press ENTER.**

ATLANTIC : GMT–4hours
EASTERN : GMT–5hours
CENTRAL : GMT–6hours
MOUNTAIN : GMT–7hours
PACIFIC : GMT–8hours
ALASKA : GMT–9hours
HAWAII : GMT–10hours
AUTO : AUTO SET
(GMT: Greenwich Mean Time)

5 **Press VCR MENU twice to return to the normal screen.**

SET UP
VCR MENU

Notes:
- To be able to select the standard time, the clock must first be set by "AUTO CLOCK" once.
- If you live in Newfoundland and the Auto Clock does not function properly, set the AUTO CLOCK menu option to OFF and set the clock manually.

To set daylight saving time

You can set the Daylight Saving Time automatically or manually.

1 **Press VCR MENU.**
Press SET + or – to select "SYSTEM SET UP", then press ENTER.

SET UP
VCR MENU

2 **Press SET + or – to select "DAYLIGHT SAVING TIME", then press ENTER.**

3 **Press SET + or – to select one of the options, then press ENTER. Press VCR MENU until the MENU screen is cleared.**

SET UP
VCR MENU

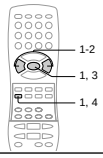
ON: for manual setting (forward one hour)
OFF: for manual setting (back one hour)
AUTO: for automatic setting (read XDS in the signal)

When you want to set the Daylight Saving Time manually, on the first Sunday in April you set to "ON", and on the last Sunday in October you set to "OFF".

Notes:
- When shipped from factory, the DAYLIGHT SAVING TIME is set to "AUTO" position.
- When the clock is not set, Daylight Saving Time setting is not available.
- When there is no Daylight Saving Time in your area, always select "OFF" position in step 3.

Tuner setting

This DVD/VCR is equipped with a channel memory feature which allows channels to skip up or down to the next channel set into memory, skipping over unwanted channels. Before selecting channels, they must be programmed into the DVD/VCR's memory. In addition to normal VHF and UHF channels, this DVD/VCR can receive up to 113 Cable TV channels. To use this DVD/VCR with an antenna, set the TV/CATV menu option to the TV mode. When shipped from the factory, this menu option is in the CATV mode.



TV/CATV selection

Preparation:
- Turn ON the TV and set to the video input mode.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)

1 **Press VCR MENU. Press SET + or – to select "CH SET UP", then press ENTER.**

SET UP
VCR MENU

2 **Press SET + or – to select "TV/CATV".**

3 **Press ENTER to select the TV or CATV mode.**
The arrow indicates the selected mode.

TV - VHF/UHF channels
CATV - CABLE TV channels

4 **Press VCR MENU until the menu screen is cleared.**

SET UP
VCR MENU

Note:
You can't select "CH SET UP" if you set the channel to "L1" or "L2".

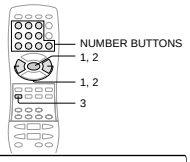
Setting channels automatically

1 **Repeat left step 1 and press SET + or – to select "AUTO CH MEMORY".**

2 **Press ENTER.**

The auto tuning will start. The channel display will count up and when finished, the screen returns to normal.

Tuner setting (continued)



To ADD/DELETE channels

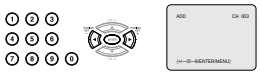
1 **Repeat the step 1 on page 27. Then press SET + or – to select the "ADD/DELETE" and press ENTER.**

2 **To Add or Delete desired channels**
Press **Number buttons** or **SET +** or **–** to select a channel number you want to add or delete.

1 Press **Number buttons** or **SET +** or **–** to select a channel number you want to add or delete.

2 **To add channels**
Press **ENTER** until "ADD" appears on the screen to set to add the unmemorized channel.
To delete channels
Press **ENTER** until "DELETE" appears on the screen to set to delete the channel from memory. The channel number will blink.

3 Repeat 1 to 2 to add or delete other channel.



3 **Press VCR MENU until the menu screen is cleared.**

SET UP
VCR MENU

Noise elimination

When you don't want to receive a weak signal broadcast, the Blue back screen can be obtained by selecting the NO NOISE BACKGROUND "ON". When the unit is shipped from the factory, the NO NOISE BACKGROUND is set to "ON".

1 **Repeat the steps 1–2 on page 26 and press SET + or – to select "NO NOISE BACKGROUND".**

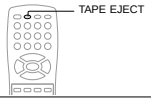
2 **Press ENTER to select "ON" position.**

3 **Press VCR MENU until the menu screen is cleared.**

SET UP
VCR MENU

Loading and unloading a cassette tape

Use only video cassette tapes marked VHS and S-VHS.



Loading

Push the center of the tape until it is automatically inserted.

Insert the cassette tape with its labeled side facing up and the erase prevention tab positioned at your left. An inverted cassette tape cannot be inserted.

Automatic power ON
When you insert a cassette tape the DVD/VCR power will turn ON automatically.

Automatic playback
When loading a cassette tape without an erase prevention tab, playback will start automatically.

Unloading

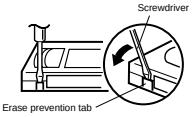
1 Press **EJECT** on the front panel or **TAPE EJECT** on the Remote.

2 Remove the cassette tape.

Automatic tape eject
This DVD/VCR will automatically rewind the tape when the tape has ended. And when the tape is rewinded to its beginning, the cassette tape will be ejected automatically.

To prevent accidental erasure

To prevent accidental erasure
Remove the erase prevention tab with a screwdriver.



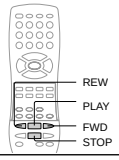
To record again
Cover the hole with a piece of adhesive tape.

Tape speed and maximum recording time

Tape Speed	Video cassette tape				
	T-160	T-120	T-90	T-60	T-30
SP (Standard Play)	2-2/3 hours	2 hours	1-1/2 hours	1 hour	30 minutes
SLP (Super Long Play)	8 hours	6 hours	4-1/2 hours	3 hours	1-1/2 hours

Cassette tape playback

To play a prerecorded tape.

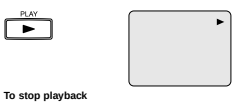


Playback

Preparation:
- Turn ON the TV and set to the video input mode.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light).

1 **Load a prerecorded tape**
(When loading a cassette tape without the erase prevention tab, playback will start automatically).

2 **To start playback**
Press **PLAY**.
Playback will start. " ▶ " will appear on the screen for about 4 seconds.



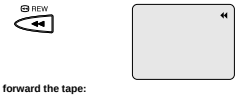
To stop playback
Press **STOP** once.
The tape will stop but remain fully loaded and ready to play.
" ■ " will appear on the screen for about 4 seconds.

Notes:
- This VCR selects the playback tape speed SP, LP or SLP automatically.
- The Cassette tape and DVD disc can be played back simultaneously. If you press **DVD/VCR**, the tape playback and DVD playback alternate with each other on the screen.
- When you select the VCR mode during DVD playback, DVD playback will stop automatically after approx. 5 minutes.

Rewind or forward the tape

Stop the playback or recording with **STOP**.

To rewind the tape:
Press **REW**.



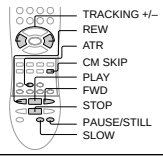
To forward the tape:
Press **FWD**.

To stop the tape-winding, press **STOP**. To switch to playback directly (without **STOP**), press **PLAY**.

■ Forward/Reverse picture search mode

When the tape is being winded, you can switch to picture search mode (see next page). To do this, press **REW** or **FWD** and hold it down. The unit will resume the tape winding as soon as the button is released.

Special playback



Picture search

Reverse picture search function
Press **REW** once or twice during the playback.
Forward picture search function
Press **FWD** once or twice during the playback.
To return to playback, press **PLAY**.

SPEED SEARCH TIMES

TAPE SPEED	PICTURE SEARCH SPEED	
	PRESS ONCE	PRESS TWICE
SP (Standard Play)	3 X	5 X
LP (Long Play)	7 X	9 X
SLP (Super Long Play)	9 X	15 X

Still picture

Press **PAUSE** during playback.
To resume normal playback, press **PLAY** or **PAUSE/STILL**.

Slow motion

During playback press **SLOW**.
To return to playback, press **PLAY** or **SLOW**.

■ Slow tracking and vertical lock adjustment
If noise bars appear in the picture during slow motion, press the **TRACKING + / –** to reduce the noise bars.
If the still picture jitters excessively, press **TRACKING + / –** to stabilize the still picture.

Frame by frame picture

Press **PAUSE/STILL** during playback.
Press **SLOW** one by one: The picture advances frame by frame.
To return to playback, press **PLAY** or **PAUSE/STILL**.

CM skip

Press **CM SKIP** during playback. The DVD/VCR will search forward through approximately 30 seconds of the tape (e.g. unwanted commercial time) for each press of **CM SKIP** (maximum six presses) and then resume normal playback.

For example : 1 press: 30 seconds of tape
2 press: 60 seconds of tape
3 press: 90 seconds of tape

Adjusting tracking condition

■ Automatic tracking adjustment
Whenever you insert a tape and start playback, automatic tracking starts working and continuously analyzes the signal to enable optimum picture quality during playback.

■ Manual tracking adjustment
If automatic tracking cannot eliminate noises well during playback, press **TRACKING +/–** to eliminate the noises. "MANUAL TR." will appear on the screen. Press it briefly for a fine adjustment, or press and hold for a coarse adjustment.

Press **ATR** to reactivate automatic tracking again. "AUTO TR." will appear on the screen.

Notes:
- The audio output is muted during SPEED SEARCH, STILL, FRAME ADVANCE and SLOW MOTION.
- During picture search mode there will be noise bars which are caused by the system.
- The Special Playback will automatically change to playback after approx. 5 minutes to protect the video tape against excessive wear.

Video head cleaning

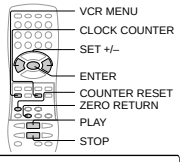
Video head clogging
■ The video heads are the means by which the DVD/VCR reads the picture from the tape during playback. In the unlikely event that the heads become dirty enough to be clogged, no picture will be played back. This can easily be determined if, during playback of a known good tape, there is good sound, but no picture (picture is extremely snowy). If this is the case, have the DVD/VCR checked by qualified service personnel.

Good Picture

Snowy Picture

Notes:
- DO NOT ATTEMPT TO CLEAN THE VIDEO HEADS OR SERVICE THE UNIT BY REMOVING THE REAR COVER.
- Video heads may eventually wear out and should be replaced when they fail to produce clear pictures.
- To help prevent video head clogging, use only good quality VHS tapes. Discard worn out tapes.

Convenient function

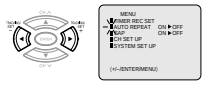


Repeat playback

The entire video tape will be played until its end. The tape will automatically rewind to the beginning and the playback will be repeated.

1 **Press VCR MENU.**
Press SET + or – to select "AUTO REPEAT".

SET UP
VCR MENU



2 **Press ENTER to select "ON" or "OFF".**
If "ON" is selected, the playback will be repeated endlessly.

3 **Press VCR MENU until the menu screen is cleared.**
If you press CALL, "⏲" will appear on the screen 11.

SET UP
VCR MENU

4 **To start the playback, press PLAY.**
The playback will be repeated endlessly.

PLAY

To cancel repeat mode:
Follow the above step **1**, then press **ENTER** to select "OFF" position. Press **VCR MENU** to return to the TV.

Zero return function

This function makes tape-rewinding stop at the counter 00:00:00 position automatically.

1 **Press CLOCK/COUNTER.**
The counter display shows the tape running time during playback or recording.

CLOCK
COUNTER

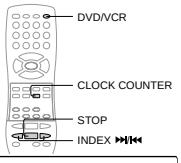
2 **Press COUNTER RESET at the desired tape position.**
The counter display will be reset to "00:00:00" position (e.g. the beginning of recording).

ANGLE
COUNTER RESET

3 **Press STOP when playback or recording is finished.**
Press ZERO RETURN.
The tape will be rewinded or fast forwarded and automatically stop at "00:00:00" position.

STOP

MEMORY
ZERO RETURN



Clock/counter display

Press **CLOCK/COUNTER**. The clock and tape counter alternate with each other in the display window.

CLOCK
COUNTER

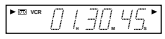
COUNTER

CLOCK

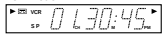
Press **DVD/VCR**. The DVD mode and the VCR mode alternate with each other in the display.

DVD/VCR

DVD mode



VCR mode



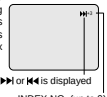
Notes:
- If you rewind the tape beyond "00:00:00", a minus sign ("–") will be displayed in front of the time.
- When you load a tape, the counter will reset to "00:00:00".
- The counter does not function on nonrecorded (blank) sections of the tape. When you rewind, fast forward or play tapes through blank sections, the counter stops.

Video index search system

This function enables you to locate the beginning of any recording made on the VCR.

Recording an INDEX MARK
The Index Search function automatically records an INDEX mark on the tape whenever a recording is initiated.

Index search
Press **INDEX** ⏭ or ⏮ during stop or play mode.
For Succeeding programs: Press **INDEX** ⏭.
For Preceding programs: Press **INDEX** ⏮.
(Additional press increases the INDEX NO. up to 9.)
When the **INDEX** ⏭ or ⏮ is pressed, the unit starts searching the INDEX NO. selected and finds the portion, then playback starts automatically. To stop the Index Search, press **STOP**.



– INDEX/SKIP STOP SKIP/INDEX +

⏭ or ⏮ is displayed

INDEX NO. (up to 9)

Notes:
- When you record an INDEX mark at the very beginning of the tape, the mark may not be found.
- During INDEX search, the tape may stop and begin to play at a slightly different location.
- INDEX may not function properly with old or worn out video tapes.
- INDEX marks may not be found if it is extremely close to the point where the search began.
- In recording, if you stop recording temporarily, the INDEX mark is not recorded on the tape.

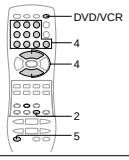
SQPB (S-VHS Quasi Playback)

You can playback the video cassette tape recorded in the S-VHS system.
However the played back picture does not have the high resolution of S-VHS system.

Note: You cannot record in S-VHS system.

Recording a TV program

Recording and viewing the same TV program



Recording a TV program

Preparation:
- Turn ON the TV and set to the video input mode.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)

1 **Load a cassette tape with the erase prevention tab intact.**
The DVD/VCR will automatically turn on.

2 **Press SP/SLP to select the desired tape speed SP or SLP.**
The tape counter and SP or SLP will appear on the screen for about 4 seconds.

PLAY MODE
SP/SLP

3 **Select "TV" or "CATV" to the appropriate position** 27.

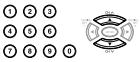
TV - VHF/UHF channels
CATV - CABLE TV channels

4 **Press Number button or CH ∧/∨ to select the channel to be recorded.**

1-9	Press **0** twice and then **1-9** as required. Example: To select 2, Press "**002**".
10-12	Press **0** first and then the remaining 2 digits in order from left to right. Example: Press **012** for "12".
13-99	Press 2 digits in order. Example: Press **22** for "22".
100-125	Press the 3 digits in order. Example: Press **110** for "110".

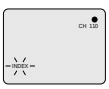
VHF/UHF/CATV CHANNELS

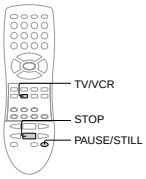
TV	CATV
VHF 2-13	VHF 2-13
UHF 14-69	STD/HRC/IRC 14-36 (A) (W) 37-59 (AA) (WW) 60-85 (AAA) (ZZZ) 86-94 (86) (94) 95-99 (A-5) (A-1) 100-125 (100)(125) 01 (5A)



5 **Press REC.**
"● " will appear on the screen for about 4 seconds and " ● " will appear on the screen.

REC
OTR





To stop recording

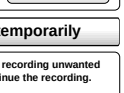
Press STOP to stop recording.
" ■ " will appear on screen for about 4 seconds.

STOP

To stop recording temporarily

Press PAUSE/STILL to avoid recording unwanted material. Press again to continue the recording.
" ●II " will appear on screen for about 4 seconds.

PAUSE/STILL



Notes:
- The pause function will be released after 5 minutes to prevent damage to the tape or the VCR. The VCR will change to the STOP mode.
- You can select a recording channel in the recording pause mode.

Recording one program while watching another

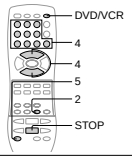
While the VCR is recording, select your desired channel on the TV.
When a TV is connected with an antenna cable only, press TV/VCR to select the TV position.
The "VCR" will go off and recording will continue.
Select the TV channel you want to watch by using the TV channel selector.

Note:
Some CATV hookups do not permit viewing one channel while recording another. See pages 16 and 17.

■Auto Rewind feature
This VCR will automatically rewind the tape when the tape has ended (except during OTR and timer recording). It will also eject the tape.

One-touch Timer Recording (OTR)

The One-touch Timer Recording feature provides a simple and convenient way to make a timed recording.



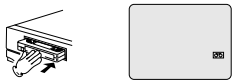
One-touch Timer Recording (OTR)

Preparation:
- Turn ON the TV and set to the video input mode.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)

Example: One-touch Timer Recording for 30 minutes.

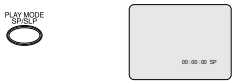
1 Load a cassette tape with the erase prevention tab intact.

The VCR will automatically turn on.



2 Press SP/SLP to select the desired tape speed SP or SLP.

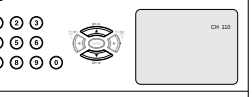
The tape counter and SP or SLP will appear on the screen for about 4 seconds.



3 Setet "TV" or "CATV" option to the appropriate position 27**.**

TV - VHF/UHF channels
CATV - CABLE TV channels

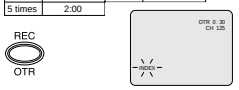
4 Press Number button or CH ∧/∨ to select the channel to be recorded.



5 Press OTR. Press the button again to stop recording after 30 minutes. Each additional press of OTR will increase recording time as shown in the chart below, up to a maximum of 5 hours.

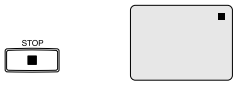
The OTR and recording time will appear on the screen for about 4 seconds. And, " ● "will keep blinking in the display.

Press	Recording time	Press	Recording time
once	NORMAL REC	6 times	3:00
twice	0:30	7 times	4:00
3 times	1:00	8 times	5:00
4 times	1:30	9 times	NORMAL REC
5 times	2:00		



To cancel OTR

Press **STOP** or turn off the power.

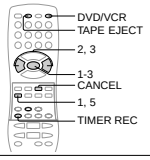


" ■ " will appear on screen for about 4 seconds.

Note:
If you wish to watch the DVD playback during the recording or the OTR, press **DVD/VCR** to change to DVD mode and perform the DVD playback 43.

Timer recording

Timer recording can be programmed on-screen with the remote control. The built-in timer allows automatic unattended recording of up to 8 programs within 1 month.

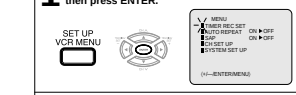


Timer recording

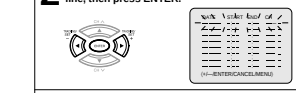
Preparation:
- Press **DVD/VCR** to select the VCR mode.
- Load a cassette tape with the erase prevention tab intact.
- Check the time and date are correct 24**.**

Example: Program a timer recording for the 26th day, channel 125 (CATV), 11:00 - 11:30 PM on timer program number 1 (Tape speed: SLP).

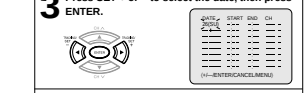
1 Press VCR MENU. Select "TIMER REC SET", then press ENTER.



2 Press SET + or – to select one of the program line, then press ENTER.



3 Press SET + or – to select the date, then press ENTER.

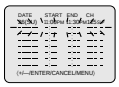


4 Set the start time, end time, channel and tape speed as in step 3.

Notes:
- Press **CANCEL** to move cursor backward for correction.
- To record from external source set the channel to "L1" or "L2". "L1" or "L2" will appear next to CH 125 (or 69).

5 To enter other programs, repeat step 2 through 4.

- To return to the normal screen, press **VCR MENU** twice.



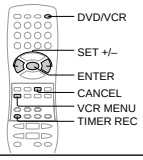
6 Press TIMER REC. The timer symbol (⏲) will appear on the display and the VCR stands by for recording.

At the same time, VCR mode will change to DVD mode automatically. You can use DVD even if the VCR is in the Timer recording mode.
If you do not use the DVD, turn the power off.

NOTES:
- The timer recording will start at 5 seconds before the time you predetermined.
- If the timer symbol(⏲) does not appear on the display in spite of the pressing of **TIMER REC**, the cassette may not have been loaded yet. 29
- If the cassette is ejected in spite of the pressing of **TIMER REC**, the erase prevention tab of the cassette may have been removed. 29

NOTES:
- If the timer symbol (⏲) blinks when the timer recording ended, the TV program has not been completely recorded because of an insufficient tape supply. Press **TIMER REC** to cancel the timer program or press **TAPE EJECT** to remove the cassette tape.
- During timer recording standby mode, the VCR mode cannot be selected. To use the VCR, press **TIMER REC** at first, then press **DVD/VCR** to change to VCR mode. After you use the VCR, press **TIMER REC** again to put the VCR into timer recording standby mode.
- If you press **TIMER REC** during timer recording, the recording operation will be interrupted. If you press **TIMER REC** again within the programmed time, the recording operation will start again.
- After a power failure or disconnection of the power plug, all programmed recording settings and time display will be lost upon resumption of power. In this case, reset the clock 24 and reprogram any timer recordings.

Timer recording (continued)

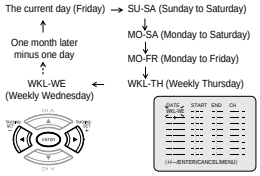


To set daily/weekly timer

Weekly (e.g. WKL-TU: each Tuesday) or daily (e.g. MO-SA: Monday to Saturday) Timer recording

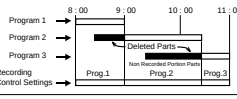
Follow the procedure of timer recording on the previous page. At picture **3** press **SET +** or **–** repeatedly until the desired setting appears. Then press **ENTER**.

When you press **SET –** repeatedly, the indicator at DATE will change as follows, in this case the day is Friday.


The current day (Friday)
SU-SA (Sunday to Saturday)
MO-SA (Monday to Saturday)
MO-FR (Monday to Friday)
WKL-TH (Weekly Thursday)
WKL-WE (Weekly Wednesday)
One month later minus one day

If the programs overlap another

Do not overlap timer programs as portions of the conflicting programs will be lost. The first recording time has priority over the next recording time as shown in the diagram below.



Notes:
- The daily/weekly recording can be made continuously until the recording is canceled or the tape reaches the end.
- During timer recording the automatic rewinding mechanism does not function.

To confirm or cancel a program

1 If the Timer has been activated, press TIMER REC to deactivate the Timer.

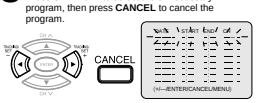
The timer symbol (⏲) will disappear. Then press **DVD/VCR** to change to VCR mode.

2 To confirm Timer program:

At picture **1** on the previous page select "TIMER REC SET" and press **ENTER**.
The timer program list will appear on the screen.

3 To cancel Timer program:

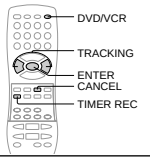
Press **SET +** or **–** to select the unnecessary program, then press **CANCEL** to cancel the program.



4 Press VCR MENU repeatedly until the menu screen is cleared.

Notes:
- If there are other timer record programs remaining, **TIMER REC** must be pressed to reactivate the timer, otherwise the remaining timer record programs will be ignored.
- You cannot confirm the Timer program during timer recording operation.
- You can correct or cancel a programmed setting in program confirm mode.

Stereo recording and playback / Separate Audio Program (SAP)



Stereo recording and playback

The VHS Hi-Fi audio system permits high fidelity recording of MTS STEREO TV broadcasts.

When a MTS STEREO broadcast is received, "STEREO" will appear on the screen and the program can be viewed or recorded in stereo.
The Hi-Fi stereo recording procedure is the same as for normal recordings.

Note:
When using a CATV system, stereo TV programs may be transmitted over a mono cable channel. In this case "STEREO" will not appear and the sound will be in mono.

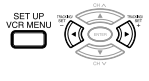
Output selection
When viewing an MTS stereo TV program, or playing a prerecorded VHS Hi-Fi stereo videotape, press **AUDIO SELECT** to select how the audio will be heard through the speakers. Normally set to the Hi-Fi stereo position, this button can be set to the MONO position if the stereo broadcast or videotape audio is of poor quality. The "R" and "L" positions allow the audio from the Right or Left Hi-Fi channel to be heard over both TV speakers. This button has no effect when viewing a MONO videotape or TV program. Each time when you press the button, OUTPUT SELECTION display appears on the screen for several seconds. Refer to the chart below.

OUTPUT SELECTION	SOUND HEARD ON BOTH SPEAKERS
STEREO	STEREO
L CH	LEFT CHANNEL AUDIO
R CH	RIGHT CHANNEL AUDIO
MONO	MONO

Separate Audio Program (SAP)

Your DVD/VCR is fitted with a SAP broadcast system which enables you to switch to a separate audio program when viewing a selected channel.
This function applies only when the program is broadcast in multi-languages through the SAP broadcast system.

1 Press VCR MENU. Then press SET + or – to select "SAP".

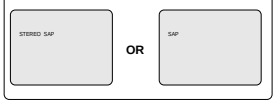


2 Press ENTER to select "ON".

Then press **VCR MENU** until the menu screen is cleared.

Listening to SAP

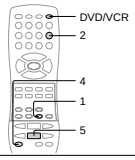
When the VCR is turned on or a channel selection is made, make certain the letters "SAP" appears on the screen. This means that the "Separate Audio Program" broadcasting is available.



NOTES:
- When playing back a tape that is not recorded in Hi-Fi stereo mode, the audio will automatically be monaural.
- When listening to a VHS Hi-Fi video tape or MTS broadcast through the VHF/UHF jack (Audio/Video cord not connected), the sound will be monaural.

Duplicating a video tape

If you connect the DVD/VCR to another VCR or Camcorder, you can duplicate a previously recorded tape. Make all connections before turning on the power.



Duplicating a video tape

Preparation:
- Turn ON the TV and set to the video input mode.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)
- Load a cassette tape with the erase prevention tab intact.
- Load a previously recorded tape into the playback VCR or Camcorder.

1 Press SP/SLP to select the desired tape speed SP or SLP.

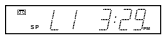
PLAY MODE SP/SLP

It is recommended that you set the Speed to the SP mode on the recording VCR for best results.

2 Press INPUT SELECT once or twice to select AUDIO/VIDEO input position.

"L1" or "L2" will appear in the display.

INPUT SELECT



L1: on the rear panel
L2: on the front panel

3 Press PLAY on the playback VCR or Camcorder.

4 Press REC on the recording VCR.

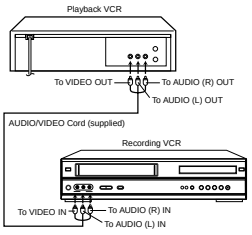
The duplicating process begins.

REC
OTR

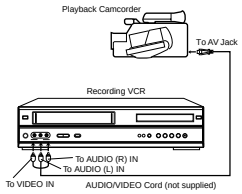
5 Press STOP after duplicating a video tape.

STOP

Connection with second video recorder



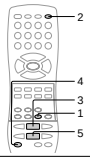
Connection with Camcorder



For duplicating a previously recorded tape from a camcorder, follow the camcorder manufacturer's instructions. A typical camcorder dubbing hookup is shown above.

Recording a DVD/CD disc

You can record disc material in DVD, Audio CD, etc. onto a Video tape with this DVD/VCR.



Duplicating a DVD or CD disc

Preparation:
- Turn ON the TV and set to the video input mode.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)
- Load a cassette tape with the erase prevention tab intact.
- Load a DVD/CD disc.

1 Press SP/SLP to select the desired tape speed SP or SLP.

PLAY MODE SP/SLP

2 Press DVD/VCR to select the DVD mode.

The DVD indicator will light.

DVD/VCR

3 Press PLAY to start playback.

PLAY

4 Press REC to start recording.

REC
OTR

The DVD/VCR will change to the VCR mode automatically and the playback picture or sound will be duplicated on the video cassette tape.

5 Press STOP if you finish recording.

If you wish to stop a DVD/CD disc, press DVD/VCR to change the DVD mode, then press STOP.

STOP

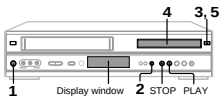
Notes:
- You may not record the beginning of the disc so this DVD/VCR start to playback the disc, then start to record.
- You can not record the disc with copy guard function. Then, the following icon and the text will show up on the TV screen.

DISC IS COPY PROTECTED

Playing a disc

This section shows you the basics on how to play a disc.

CAUTION
Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.



Basic playback

Preparations:
- When you want to view a disc, turn on the TV and select the video input connected to the DVD/VCR.
- When you want to enjoy the sound of discs from the audio system, turn on the audio system and select the input connected to the DVD/VCR.

1 Press the power button (I/⏻).

ON/STANDBY

The DVD/VCR turns on.

2 Press DVD/VCR to select the DVD mode.

VCR/DVD SELECT

The DVD indicator will light.

3 Press OPEN/CLOSE.

OPEN/CLOSE

The disc tray opens.

4 Place the disc on the disc tray.

With the playback side down

- There are two different disc sizes. Place the disc in the correct guide on the disc tray. If the disc is out of the guide, it may damage the disc and cause the DVD/VCR to malfunction.
- Do not place a disc which is unplayable in this DVD/VCR.

5 Press OPEN/CLOSE to close the disc tray.

OPEN/CLOSE

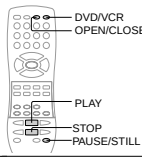
Playback starts.

If you insert a DVD video disc that contains a top menu, a menu may appear. See "Locating a title using the top menu." 46
- You may need to press the TOP MENU or MENU button to display disc menu (depending on the actual DVD video disc.)

■ To start playback in the stop mode

Press **PLAY**.

PLAY



■ To obtain a higher quality picture

Occasionally, some picture noise not usually visible during a normal broadcast may appear on the TV screen while playing a DVD video disc because the high resolution pictures on these discs include a lot of information. While the amount of noise depends on the TV you use with this DVD/VCR, you should generally reduce the sharpness adjustment on your TV when viewing DVD video discs.

■ About

The icons on the heading bar show the playable discs for the function described under that heading.
- : You can use this function with DVD video discs.
- : You can use this function with VIDEO CDs.
- : You can use this function with audio CDs.

■ To pause playback (still mode)

Press **PAUSE/STILL** during playback.

PAUSE/STILL

To resume normal playback, press the PLAY button.
- The sound is muted during still mode.

■ To stop playback

Press **STOP**.

STOP

■ To remove the disc

Press **OPEN/CLOSE**.

OPEN/CLOSE

Remove the disc after the disc tray opens completely.

Be sure to press the OPEN/CLOSE button to close the disc tray after you remove the disc.

■ About the screen saver

If you pause a picture of a DVD video disc and leave it still for a long while, the screen saver of the DVD/VCR player automatically appears (when "Screen Saver" is set to "On" 61). To turn off the screen saver, press the PLAY button.

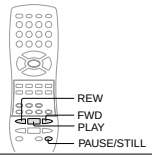
■ Playing a Disc while the VCR section is recording or standing by for timer recording

1) Start to record.
   Follow step 1–5 on page 34.
   - If the DVD/VCR is standing by for recording, turn on the DVD/VCR.
2) Press DVD/VCR to select DVD mode. The DVD indicator will light.
3) Play a disc.
   Follow step 3 – step 5 on page 42.
   - Press PLAY if the DVD/VCR does not start to play a disc automatically.
4) Stop to play
   Press STOP to stop play back a disc.

Notes:
- Do not move the DVD/VCR during playback. Doing so may damage the disc.
- Use the OPEN/CLOSE button to open and close the disc tray. Do not push the disc tray while it is moving. Doing so may cause the DVD/VCR to malfunction.
- Do not push up on the disc tray or put any objects other than discs on the disc tray. Doing so may cause the DVD/VCR to malfunction.
- In many instances, a menu screen will appear after playback of a movie is completed. Prolonged display of an on-screen menu may damage your television set, permanently etching that image onto its screen. To avoid this, be sure to press the STOP button on your remote control once the movie is completed.
- During the DVD playback if you change the operating mode from DVD to VCR, the DVD will continue to play back the disc and stop after about 5 minutes.

Playing a disc (continued)

You can play discs at various speeds, and resume playback from the location where you stopped playback.



Playing in fast reverse or fast forward directions

Press REW or FWD during playback.

REW FWD

REW: Fast reverse playback
FWD: Fast forward playback

Each time you press the REW or FWD button, the playback speed changes.

■ **To resume normal playback**
Press **PLAY**.

PLAY

Notes:
- The DVD/VCR mutes sound and subtitles during reverse and forward scan of DVD video discs. However, the DVD/VCR plays sound during fast forward or fast reverse play of audio CDs.
- The playback speed may differ depending on the disc.

Playing frame by frame

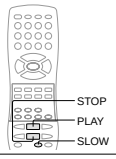
Press PAUSE/STILL during still playback.

PAUSE/STILL — Each time you press the PAUSE/STILL button, the picture advances one frame.

■ **To resume normal playback**
Press **PLAY**.

PLAY

Note:
The sound is muted during frame by frame playback.



Playing in slow-motion

Press SLOW during playback.

SLOW — Each time you press the SLOW button, the slow-motion speed changes.

■ **To resume normal playback**
Press **PLAY**.

PLAY

Note:
The sound is muted during slow-motion playback.

Resuming playback from the same location

1 Press STOP at the location where you want to interrupt playback.

STOP — The DVD/VCR memorizes the location where playback is stopped.

2 Press PLAY.

PLAY — The DVD/VCR resumes playback from the location where you stopped playback.

■ **To start playback from the beginning regardless of the location where you stopped playback**

1 Press **STOP** twice.

STOP — The DVD/VCR's memory is cleared.

2 Press **PLAY**.

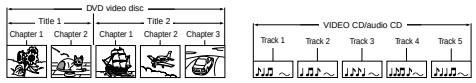
PLAY
- DVD: Playback starts from the beginning of the current title.
- VCD CD: Playback starts from the beginning of the disc.

• If you want to return to the beginning of a DVD video disc, open and close the disc tray once with the OPEN/CLOSE button before pressing the PLAY button.

Notes:
- The DVD/VCR's memory is also cleared when:
  – you change the parental lock setting (61) or select a disc menu language (59).
  – you open the disc tray.
- There may be a difference in the location where playback resumes depending on the disc.
- Settings you changed using the on-screen displays while the DVD/VCR keeps a location in the memory may function only after the memory is cleared.

Locating a specific title, chapter, or track

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs and audio CDs are divided into tracks. You can quickly locate any specific title, chapter, or track.



Locating a title using the top menu

1 Press TOP MENU.

TOP MENU — The top menu appears on the TV screen.

e.g.

2 Press ▲/▼/◄/► to select the title you want.

If the titles in the top menu are assigned a number, you can directly locate a specific title by pressing its designated number with the number buttons.

3 Press ENTER.

ENTER — Playback starts from chapter 1 of the selected title.

Notes:
- The instructions above describe basic procedures which may vary depending on the contents of the DVD video disc. If different instructions appear on the TV screen, follow those instructions.
- If you display the top menu during playback and press the TOP MENU button again without selecting any title, the DVD/VCR may resume playback from the point where you first pressed the TOP MENU button (depending on the actual DVD video disc.)
- This method of locating a title is available only on a disc that contains a top menu.
- Instruction notes of discs may refer to the button that displays the top menu as TITLE button.

Locating a specific chapter or track

Press SKIP ⏮ or ⏭ repeatedly to display the chapter or track number you want.

Playback starts from the selected chapter or track.

SKIP/INDEX + — To locate succeeding chapters or tracks

Playback starts from the beginning of the current chapter or track.

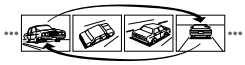
– INDEX/SKIP — When you press twice, playback starts from the beginning of the preceding chapter or track.

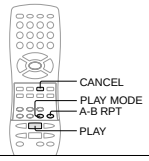
T | C 1

Notes:
- Some titles may not display chapter numbers.
- When you set "Title Stop" to "Off" (63), you can access chapters in another title. If you go back to the preceding title by pressing the SKIP ⏮ button, the DVD/VCR locates the first chapter of the title. When "Title Stop" is set to "On," you can access chapters only within the current title.

Repeat playback / Random playback

You can play a specific title, chapter, track, or segment repeatedly.
And also you can play titles, chapters within a title, or tracks in random order.





Repeat playback and Random playback

1 Press PLAY MODE.

PLAY MODE SP/SLP — Each time you press the PLAY MODE button, the repeat mode changes as follows.

Chapter Repeat

DVD	Chapter Repeat	Repeats the current chapter.
DVD	Title Repeat	Repeats the current title.
VCD CD	Track Repeat	Repeats the current track.
DVD VCD CD	All Repeat	Repeats the entire disc.
DVD	Chapter Random	Plays the chapters within the current title in random order.
DVD	Title Random	Plays the titles in random order.
VCD CD	Track Random	Plays the tracks in random order.
	Off	Resumes normal playback.

2 Press PLAY.

PLAY — The DVD/VCR starts repeat playback or random playback.
Press the PLAY button within about 5 seconds after you press the PLAY MODE button.

■ **To resume normal playback**
Press **CANCEL**.

CANCEL

Notes:
- If you press the PLAY MODE button during playback, the DVD/VCR automatically starts repeat playback and random playback after finishing the current title, chapter or track.
- Some discs may not permit repeat operation.
- You cannot use the random playback function in conjunction with the memory playback function.

Repeating a specific segment

1 Press A-B RPT at the beginning of the segment (point A) you want to play repeatedly.

A-B RPT — A–

2 Press A-B RPT again at the end of the segment (point B).

A-B RPT — The DVD video player automatically returns to point A and starts repeat playback of the selected segment (A-B).

A–B

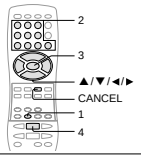
■ **To resume normal playback**
Press **CANCEL**.

CANCEL

Notes:
- Some discs may not permit A-B repeat operation.
- You cannot set the A-B repeat function for a segment that includes multiple camera angles (50).
- You can specify a segment only within the current title or track (VIDEO CD).
- There may be a slight difference between point A and the location where playback actually resumes depending on the disc.

Playing in a favorite order

You can combine your favorite titles, chapters, or tracks and play them in the order you determine. You can program up to 30 selections into the memory. (Memory playback)



Setting titles, chapters, or tracks in a favorite order

1 **Press MEMORY.**

MEMORY
ZERO RETURN

during stop | during playback

2 **Press ◄/► to select "T" or "CT". Use the number buttons to input the favorite number.**

T : Title number
CT : Chapter number or track number

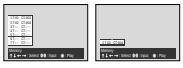
- If you input a large number than the number that is recorded on the disc, the bar will be skipped.
- The input number into "T" for CD is not effective.

during stop | during playback

3 **Press ▼ or ENTER. Set the "T" and "CT" to bar that you want to enter as in step 2.**

- When you select another chapter In the same title, you do not need to select the title number.

during stop | during playback



4 **Press PLAY to start MEMORY playback.**

PLAY

■ To cancel the programmed selections

1 While the display appears on the TV screen, press ▲/▼ to move the highlighted bar to the item you want to cancel.
2 Press **CANCEL**.

■ To resume normal playback from memory playback

Press **CANCEL**.

CANCEL

The memory playback indicator disappears.

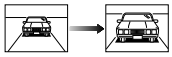
■ To program during playback

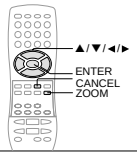
If you press the **MEMORY** button during playback, a programming display appears.
Follow steps **2** and **3**.

Notes:
- Some discs may not permit memory playback operation.
- If you press the MEMORY or RETURN button while the display appears on the TV screen, the display disappears.
- The programmed selections will be cleared when you turn off the DVD/VCR.

Zooming a picture

You can magnify areas within a picture.





Zooming a picture

Press ZOOM during normal, slow or still playback.

ZOOM
CM SKIP

The DVD/VCR enters the zoom playback mode and displays the icon.

e.g.

ZOOM : As you repeatedly press the ENTER (or ZOOM) button while "ZOOM" is selected, the magnification level changes.
Variation of the levels includes image reduction.

EXIT : If you press the ENTER button while "EXIT" is highlighted, you can turn off the icon, keeping the current magnification level.

You can shift the highlight within the icon by the ▲/▼/◄/► buttons.

If you press the ▲/▼/◄/► buttons, the zoom point shifts.

CANCEL

Pressing the CANCEL button restores the zoom point to the center of the picture.

■ To resume normal playback

While "ZOOM" is selected, press **ZOOM** repeatedly to turn off the icon.
Picture restores the size when the icon disappears.

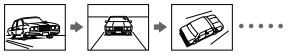
ZOOM
CM SKIP

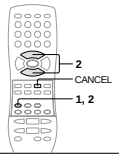
- The ENTER button cannot cancel zoom playback if you have turned off the icon by selecting "EXIT." To restore normal picture size, press the ZOOM button to display the icon, then further press the ZOOM button until the icon turns off.

Notes:
- Some discs may not respond to zoom feature.
- During some scenes, the buttons may not work as described.
- Zooming does not work on subtitles or menus included on DVD video discs.
- The magnification level varies depending on the picture size you select. 58

Selecting the camera angle

If the scene was recorded from multiple angles, you can easily change the camera angle of the scene you are watching.





Changing the camera angle

1 **Press ANGLE while playing a scene recorded with multiple angles.**

ANGLE
COUNTER RESET

While playing a scene recorded with multiple angles, the angle icon ( ) flashes in the DVD display.
Press the ANGLE button while the angle icon is flashing.

e.g.

2 **Press ANGLE or ▲/▼ while the angle number is displayed on the TV screen.**

ANGLE
COUNTER RESET

Each time you press the ANGLE button, the camera angle changes.

You can change the camera angle directly by pressing the number buttons corresponding to its angle number instead of using the ▲/▼ buttons.

■ To turn off the angle number display

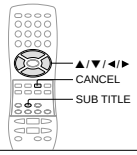
Press **CANCEL**.

CANCEL

Notes:
- You can change the camera angle during still playback. The camera angle changes to the new setting when you resume normal playback.
- If you pause a picture immediately after changing a camera angle, the resumed playback picture may not display the new camera angle.

Selecting subtitles

You can display subtitles on the TV screen and select a subtitle language from those included on the DVD video disc.



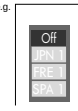
Selecting a subtitle language

1 **Press SUB TITLE during playback.**

SUB TITLE
ATR

The current subtitle setting is displayed.

e.g.



The abbreviation of the language appears instead of the language name. Refer to the list of languages and their abbreviations. 64

2 **Press SUB TITLE or ▲/▼ while the subtitle setting is displayed on the TV screen.**

SUB TITLE
ATR

To turn off the subtitle setting display, press the CANCEL or ENTER button.

■ To turn subtitles on or off

1 Press **SUB TITLE** during playback.

SUB TITLE
ATR

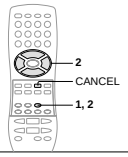
2 Press ◄/► while the subtitle setting is displayed on the TV screen, to select "On" or "Off."

Notes:
- Some DVD video discs are set to display subtitles automatically, and you cannot turn them off even if you set the subtitle function to off.
- During some scenes, the subtitles may not appear immediately after you select "On."
- Some DVD video discs will allow you to make subtitle selections and turn subtitles on or off only via the disc menu.

Notes:
- When you turn on the DVD/VCR or replace a disc, the player returns to the initial default setting 60.
  When you select a subtitle language which is not included on the disc, the DVD/VCR plays a prior language programmed on the disc.
- During some scenes, the subtitles may not appear immediately after you change the subtitle language.

Selecting a language

You can select a preferred language and sound recording system from those included on the DVD video disc.



Selecting a playback audio setting

1 Press AUDIO during playback.

AUDIO / AUDIO SELECT

The current audio setting is displayed.

e.g.

The abbreviation of the language appears instead of the language name. Refer to the list of languages and their abbreviations. 64

2 Press AUDIO or ▲/▼ while the audio setting is displayed on the TV screen.

AUDIO / AUDIO SELECT

Each time you press the AUDIO button, the audio settings included on the DVD video disc change.

If you press the ◄/► buttons, you can select output sound format. 58

To turn off the audio setting display, press the CANCEL button.

■ Selecting sound channels of VIDEO CDs

You can switch left and right channels by pressing the **AUDIO** button repeatedly during playback.

Notes:

- When you turn on the DVD/VCR or replace a disc, player returns to the initial default setting 60.
  If you select a sound track which is not included on the disc, the DVD/VCR plays a prior sound track programmed on the disc.
- Some discs allow you to change audio selections only via the disc menu. If this is the case, press the MENU button and choose the appropriate language from the selections on the disc menu.

■ Output sound conversion table (sampling frequency/quantization bit)

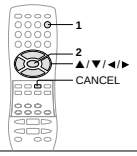
Discs	Recording system		Audio selection from the menu 56 58 and output jacks on the rear panel					
			"Bitstream"		"Analog 2ch"		"PCM"	
			BITSTREAM/PCM jack	ANALOG AUDIO OUT jacks	BITSTREAM/PCM jack	ANALOG AUDIO OUT jacks	BITSTREAM/PCM jack	ANALOG AUDIO OUT jacks
DVD video discs	Dolby Digital		Bitstream	48 kHz/20 bit	Bitstream	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
	Linear PCM	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
		48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
		48 kHz/24 bit	48 kHz/16 bit	48 kHz/24 bit	48 kHz/16 bit	48 kHz/24 bit	48 kHz/16 bit	48 kHz/24 bit
		96 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit	—	96 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
		96 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit	—	96 kHz/20 bit	48 kHz/16 bit	48 kHz/20 bit
		96 kHz/24 bit	48 kHz/16 bit	48 kHz/24 bit	—	96 kHz/24 bit	48 kHz/16 bit	48 kHz/24 bit
	DTS		Bitstream	—	Bitstream	—	—	—
	MPEG1, MPEG2		Bitstream	48 kHz/16 bit	Bitstream	48 kHz/16 bit	48 kHz/16 bit	48 kHz/16 bit
VIDEO CDs	MPEG1		44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit
Audio CDs	Linear PCM 44.1 kHz/16 bit		44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit	44.1 kHz/16 bit
	DTS		Bitstream	(Noise)	Bitstream	(Noise)	Bitstream	(Noise)

: 3D sound enhancement can function.

Selecting the sound enhancement (E.A.M.*)

You can easily switch a preferred audio enhancement.

*E.A.M.: Enhanced Audio Mode



Selecting the sound enhancement

1 Press DISPLAY twice.

The folling display appears.

DISPLAY/CALL

2 Press ◄/► to select the E.A.M icon, then press ENTER.

The sound enhancement menu appears.

3 Select the sound enhancement by pressing ▲/▼.

Each time you press the button, the sound enhancement changes.

Normal:
Normal sound.

3D:
To obtain expansive virtual surround sound effects from just two speakers.

Dialogue:
To control critical center channel information to make dialogue more intelligible (only when playing a DVD video disc recorded on the Dolby Digital recording system).

- To use this enhancement on sounds output from the BITSTREAM/PCM jack, be sure to set "Audio Out Select" to "PCM." 58

■ To exit the audio enhancement selection

Press **CANCEL**.

CANCEL

Notes:

- Actual effects to sounds may vary depending on the speaker system. Make selection according to your preference.
- Actual effects to sounds may vary depending on the disc.
- When the DVD/VCR is connected to an amplifier equipped with Dolby Pro Logic Surround, select "Normal". Otherwise, Dolby Pro Logic Surround may function differently than usual.
- Selecting "Dialogue" disables "Dynamic Range Control" function 58.
- During MP3 playback, the sound enhancement is not effective.

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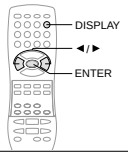
On-screen display operation

When you turn on the on-screen display, you can view information on operational status and access features and settings.



On-screen display operation

Press DISPLAY.

DISPLAY/CALL

The following display appears.
Each time you press the DISPLAY button, the on-screen display changes as follows.
If you press the ◄/► buttons to select an icon, then press the ENTER button, you can access the specific feature.
When you select an icon (★), there is no need to press the ENTER button.
See the pages in ▭ for details on the features.

e.g. When playing a DVD video disc

Press DISPLAY again.

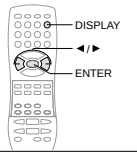
Press DISPLAY again.

- **T** ★ : Title number (Track number) Locate a title or track using the number buttons. 46
- **C** ★ : Chapter number Locate a chapter using the number buttons. 46
- ★ : Elapsed time of the current title To enter the time to locate a desired location.
- : Audio setting 52
- : Subtitle setting 51
- : Angle setting 50
- : To turn off the display.

- **T** ★ : Title number (Track number) Locate a title or track using the number buttons. 46
- **C** ★ : Chapter number Locate a chapter using the number buttons. 46
- ★ : Remaining time of the current title To enter the time to locate a desired location.
- E.A.M. : E.A.M. (Enhanced Audio Mode). 53
- ZOOM : To zoom a picture. 49
- : "Audio Out Select" setting 58
  BST: Bitstream 2CH: Analog 2ch PCM: PCM
- : To turn off the display.

(continued)

On-screen display operation (continued)



On-screen display operation (continued)

- **T** ★ : Title number (Track number) Locate a title or track using the number buttons. 46
- **C** ★ : Chapter number Locate a chapter using the number buttons. 46
- □ : To stop playback. 43
- : Playback starts from the beginning of the current chapter or track. 46
- : Fast reverse playback 44
- : To start playback. 42
- : Fast forward playback 44
- : To locate succeeding chapters or tracks. 46
- : To begin slow motion playback. 45
- : To pause playback. 43
- : To turn off the display.

Press DISPLAY again.

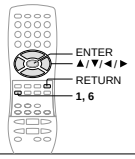
OFF
To turn off the on-screen display, press DISPLAY again.

The on-screen display will vary depending on the disc.

- DVD : Data transfer rate (Mbit/s) = Amount of picture, sound and subtitle data in the DVD video disc transferred per second. The larger the value is, the more data processed, but this does not necessarily insure better picture quality.
- CD : CD-Text Displays CD-Text data if included on the audio CDs. (Some letters may not be displayed properly depending on the disc.)
- VCR : The on-screen display turns off.

Customizing the function settings

You can change the default settings to customize performance to your preference.



Setting procedure

1 **Press SET UP during stop.**

SET UP / VCR MENU

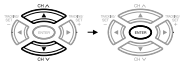
The following on-screen display appears.

2 **Press ◄/► to select a symbol for the setting you want to change.**

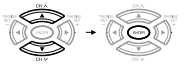
(See the next page.)

- Picture performance settings
- Output sound settings
- Language settings
- Display settings
- Operational settings
- Initial setup

3 **Press ▲/▼ to select the setting you want to change, then press ENTER.**



4 **Change the selection by ▲/▼ or other buttons, by referring to the corresponding pages 57, then press ENTER.**



5 **Repeat steps 3 and 4 to change other settings.**

To select another operation, go back to step 2.

6 **Press SET UP.**

The on-screen display disappears.

SET UP / VCR MENU

■ **To return to the previous display**

Press **RETURN**.

RETURN

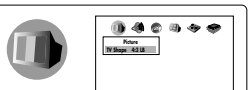
Note:

The on-screen display disappears when you press the SET UP button.

Setting		Details	Page
TV Shape	DVD	**To select a picture size according to the aspect ratio of your TV.**	**58**
Audio Out Select	DVD VCD CD	**To select an output sound format corresponding to your system connection.**	**58**
Dynamic Range Control	DVD	**To turn on or off a function that makes faint sounds easier to hear even if you lower the volume during late hours playback.**	**58**
Karaoke Vocal	DVD	**To turn on or off the vocal output during DVD KARAOKE disc playback.**	**59**
On-Screen Language	DVD VCD CD	**To select a preferred language for on-screen displays.**	**59**
Disc Menu Language	DVD	**To select a preferred language for disc menus.**	**59**
Audio Language	DVD	**To select a preferred language for the sound track.**	**60**
Subtitle Language	DVD	**To select a preferred language for subtitles.**	**60**
On-Screen Displays	DVD VCD CD	**To turn on or de-activate the operational status display on the TV screen.**	**61**
Background	DVD VCD CD	**To select the background color or background picture.**	**61**
Screen Saver	DVD	**To turn the screen saver on or off.**	**61**
Pause/Still	DVD	**To select the resolution of still pictures. (Field/Frame)**	**61**
Parental Lock	DVD	**To turn the parental lock function on or off.**	**61**
Title Stop	DVD	**To turn on or off a feature that automatically stops playback after a title has been viewed.**	**63**
PBC	VCD	**To use the menu screen when playing a PBC-controllable VIDEO CD.**	**63**
On-Screen Language **TV Shape** **Audio Out Select**	DVD VCD CD	**To install the initial system setting.**	**63**

Customizing the function settings (continued)

Setting details



TV Shape DVD

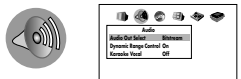
4:3 Letterbox: Select when a standard 4:3 TV is connected.
Displays theatrical images with masking bars above and below the picture.

4:3 Normal: Select when a standard 4:3 TV is connected.
Displays pictures cropped to fill your TV screen. Either or both sides of the picture are cut off.

16:9 Widescreen: Select when a 16:9 wide TV is connected.

Notes:

- The displayable picture size is preset on the DVD video disc. Therefore, the playback picture of some DVD video discs may not conform to the picture size you select.
- When you play DVD video discs recorded in the 4:3 picture size only, the playback picture always appears in the 4:3 picture size regardless of the TV shape setting.
- If you select "16:9 Widescreen" and you own a 4:3 TV set, the DVD playback picture will be horizontally distorted during playback. Images will appear to be horizontally compressed. Always be sure that your TV shape conforms to the actual TV in use.



Audio Out Select DVD VCD CD

Select the output sound format corresponding to your system connection.
For details of sound recording systems, see 52.

Bitstream: Select when connected to an amplifier equipped with a Dolby Digital, DTS, MPEG1 or MPEG2 decoder. 20 21
The DVD/VCR outputs digital audio information in the bitstream format when you play a DVD video disc recorded on the Dolby Digital, DTS, MPEG1 or MPEG2 recording system.

Analog 2ch: Select when connected to a TV, or Dolby Pro Logic or stereo system via the analog audio jacks. 18 19 20

PCM: Select when connected to a 2 channel digital stereo amplifier. 21
The DVD/VCR outputs sounds in the PCM 2ch format when you play a DVD video disc recorded on the Dolby Digital, MPEG1 or MPEG2 recording system.

Dynamic Range Control DVD

Off: Full dynamic range is maintained.
On: Dynamic range is reduced.

Notes:

- This function works only during playback of Dolby Digital recorded discs.
- The level of Dynamic Range Reduction may differ depending on the DVD video disc.

Karaoke Vocal DVD

Off: The primary vocal is not output.
On: The primary vocal is output when it is recorded on the disc.

Notes:

- The vocal output feature is used during playback of Dolby Digital (multi-channel) recorded DVD KARAOKE discs. This feature allows you to turn off vocal audio tracks, or restore them for background accompaniment.
- When playing KARAOKE, connect appropriate audio equipment such as an amplifier to the DVD/VCR.

On-Screen Language DVD VCD CD

English: To view on-screen displays in English.
Français: To view on-screen displays in French.
Español: To view on-screen displays in Spanish.

Disc Menu Language DVD

English: To display disc menus in English.
French: To display disc menus in French.
Spanish To display disc menus in Spanish.
Others: To make a further choice.
After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 64.
2) Select the first character by pressing the ▲/▼ buttons.
3) Press the ◄/► buttons to shift and select the second character by pressing the ▲/▼ buttons.

4) Press the ENTER button.

Note:

Some DVD video discs may not include your pre-selected language. In this case, the DVD/VCR automatically displays disc menus consistent with the disc's initial language setting.

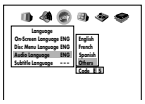
Customizing the function settings (continued)

Setting details

Audio Language DVD

English: To play sound tracks in English.
French: To play sound tracks in French.
Spanish: To play sound tracks in Spanish.
Others: To make a further choice.
After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 64.
2) Select the first character by pressing the ▲/▼ buttons.
3) Press the ◄/► buttons to shift and select the second character by pressing the ▲/▼ buttons.



4) Press the ENTER button.

Note:
Some DVD video discs may be played in a different language than you selected. A prior language may be programmed on the disc.

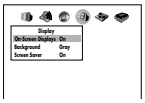
Subtitle Language DVD

English: To display subtitles in English.
French: To display subtitles in French.
Spanish: To display subtitles in Spanish.
No Subtitle: To disable subtitles.
Others: To make a further choice.
After pressing the ENTER button, follow steps 1) - 4) below.

1) Obtain the abbreviation of the preferred language from the list 64.
2) Select the first character by pressing the ▲/▼ buttons.
3) Press the ◄/► buttons to shift and select the second character by pressing the ▲/▼ buttons.

4) Press the ENTER button.

Notes:
- Some DVD video discs may be set to display subtitles in a different language than you selected. A prior subtitle language may be programmed on the disc.
- Some DVD video discs allow you to change subtitle selections only via the disc menu. If this is the case, press the MENU button and choose the appropriate subtitle language from the selection on the disc menu.



On-Screen Displays DVD VCD CD

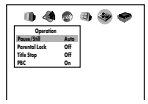
Off: Operational modes (e.g. "▯▯", "▷▷") are not displayed.
On: Operational modes (e.g. "▯▯", "▷▷") are displayed on-screen.

Background DVD VCD CD

Blue: Blue background.
Gray: Gray background.
Picture: To use the picture which appears when you turn on the DVD/VCR as a background.
Jacket: To use the jacket picture included on some discs as a background. If it is not included, a gray background will be substituted.

Screen Saver DVD

Off: The screen saver is disengaged.
On: The screen saver operates.



Pause/Still DVD

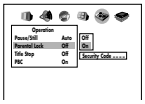
Auto: For normal use. Still and fast motion images can be paused.
Frame: The resolution of still pictures is improved, so that you can make a motionless picture more clearer when you pause it.

Parental Lock DVD

DVD video discs equipped with the parental lock function are rated according to their content. The contents allowed by a parental lock level and the way a DVD video disc can be controlled may vary from disc to disc. For example, if the disc allowed you could edit out violent scenes unsuitable for children and replace them with more suitable scenes, or lock out playback of the disc altogether.

- DVD video discs may or may not respond to the parental lock settings. This is not a defect in the DVD/VCR. Make sure this function works with your DVD video discs.

Off: The parental lock feature does not function.
After pressing the ENTER button, follow step 1) below.
On: To activate the parental lock feature or change the settings.
After pressing the ENTER button, follow steps 1) - 3) below.



(Continued)

Customizing the function settings (continued)

Setting details

(Continued)

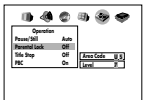
1) Press the number buttons to create a personal 4-digit security code, then press the ENTER button.
If you make a mistake before pressing the ENTER button, press the CANCEL button and enter your 4-digit security code again.

2) Enter the code of a country/area whose standards were used to rate the DVD video disc, referring to the list below.

Country/Area	Code
AUSTRALIA	AU
BELGIUM	BE
CANADA	CA
CHINA	CN
CHINA HONG KONG	HK
DENMARK	DK
FINLAND	FI
FRANCE	FR
GERMANY	DE
INDONESIA	ID
ITALY	IT
JAPAN	JP
MALAYSIA	MY
NETHERLANDS	NL
NORWAY	NO
PHILIPPINES	PH
RUSSIAN FEDERATION	RU
SINGAPORE	SG
SPAIN	ES
SWEDEN	SE
SWITZERLAND	CH
TAIWAN	TW
THAILAND	TH
UNITED KINGDOM	GB
UNITED STATES	US

a) Select the first character by pressing the ▲/▼ buttons.
b) Press the ◄/► buttons to shift and select the second character by pressing the ▲/▼ buttons.
c) Press the ENTER button.

3) Press the ▲/▼ buttons to select the parental lock level, then press the ENTER button.



You cannot play DVD video discs rated higher than the level you selected unless you cancel the parental lock function.
For example, when you select level 7, discs rated higher than level 7 are locked out and cannot be played.

The parental lock level is equivalent to the following USA movie ratings.
Level 7: NC-17
Level 6: R
Level 4: PG 13
Level 3: PG
Level 1: G

The parental lock levels for other countries/areas than U.S. are included for future use. Check the appropriate parental lock level when you buy a DVD video disc equipped with the parental lock feature in the future.

■ **To change the parental lock level**
Follow steps 1) - 3).

■ **To change your 4-digit security code**
1) After selecting "On" or "Off," press the STOP button four times, then press the ENTER button.

The 4-digit security code is cleared.
2) Press the number buttons to create a new 4-digit security code.
3) Press the ENTER button.

Title Stop DVD

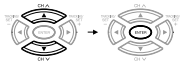
Off: The DVD/VCR continues after playback of a title is completed.
On: The DVD/VCR stops after playback of a title is completed.

PBC VCD

Off: When playing a VIDEO CD without using the menu.
On: To use the menu when playing a PBC-featured VIDEO CD.

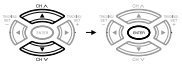
Initial Setup DVD VCD CD

1) Press the ▲/▼ buttons to select "On-Screen Language," and press the ENTER button.



2) Select a language pressing the ▲/▼ buttons, and press the ENTER button.

See page 59, "On-screen Language."



3) Make your selection in the same manner as step 1) then step 2).

See page 58, "TV Shape."
See page 58, "Audio Out Select."

Table of languages

Table of languages and their abbreviations

Abbreviation	Language
– – –	No alternate language
CHI (ZH)	Chinese
DUT (NL)	Dutch
ENG (EN)	English
FRE (FR)	French
GER (DE)	German
ITA (IT)	Italian
JPN (JA)	Japanese
KOR (KO)	Korean
MAY (MS)	Malay
SPA (ES)	Spanish
AA	Afar
AB	Abkhazian
AF	Afrikaans
AM	Amharic
AR	Arabic
AS	Assamese
AY	Aymara
AZ	Azerbaijani
BA	Bashkir
BE	Belorussian
BG	Bulgarian
BH	Bihari
BI	Bislama
BN	Bengali, Bangla
BO	Tibetan
BR	Breton
CA	Catalan
CO	Corsican
CS	Czech
CY	Welsh
DA	Danish
DZ	Bhutani
EL	Greek
EO	Esperanto
ET	Estonian
EU	Basque
FA	Persian
FI	Finnish
FJ	Fiji
FO	Faroese
FY	Frisian
GA	Irish
GD	Scottish Gaelic
GL	Galician

Abbreviation	Language
GN	Guarani
GU	Gujarati
HA	Hausa
HI	Hindi
HR	Croatian
HU	Hungarian
HY	Armenian
IA	Interlingua
IE	Interlingue
IK	Inupiak
IN	Indonesian
IS	Icelandic
IW	Hebrew
JI	Yiddish
JW	Javanese
KA	Georgian
KK	Kazakh
KL	Greenlandic
KM	Cambodian
KN	Kannada
KS	Kashmiri
KU	Kurdish
KY	Kirghiz
LA	Latin
LN	Lingala
LO	Laotian
LT	Lithuanian
LV	Latvian, Lettish
MG	Malagasy
MI	Maori
MK	Macedonian
ML	Malayalam
MN	Mongolian
MO	Moldavian
MR	Marathi
MT	Maltese
MY	Burmese
NA	Nauru
NE	Nepali
NO	Norwegian
OC	Occitan
OM	(Afan) Oromo
OR	Oriya
PA	Panjabi
PL	Polish
PS	Pashto, Pushto

Abbreviation	Language
PT	Portuguese
QU	Quechua
RM	Rhaeto-Romance
RN	Kirundi
RO	Rumanian
RU	Russian
RW	Kinyarwanda
SA	Sanskrit
SD	Sindhi
SG	Sango
SH	Serbo-Croatian
SI	Singhalese
SK	Slovak
SL	Slovenian
SM	Samoan
SN	Shona
SO	Somali
SQ	Albanian
SR	Serbian
SS	Siswati
ST	Sesotho
SU	Sundanese
SV	Swedish
SW	Swahili
TA	Tamil
TE	Telugu
TG	Tajik
TH	Thai
TI	Tigrinya
TK	Turkmen
TL	Tagalog
TN	Setswana
TO	Tongan
TR	Turkish
TS	Tsonga
TT	Tatar
TW	Twi
UK	Ukrainian
UR	Urdu
UZ	Uzbek
VI	Vietnamese
VO	Volapük
WO	Wolof
XH	Xhosa
YO	Yoruba
ZU	Zulu

Before calling service personnel

Check the following guide for the possible cause of a problem before contacting service.

Symptoms and correction

SYMPTOMS	POSSIBLE SOLUTIONS	PAGE
DVD/VCR		
DVD/VCR does not operate.	• Make sure the power cord is plugged in. • Try another AC outlet. • Power is off, check fuse or circuit breaker. • Unplug unit, then plug it back in. • Select the DVD or VCR mode before operating.	5 – – 5 30,42
No picture.	• Antenna connection is not correct or antenna cable is disconnected. • The video channel is not in the correct position or the TV is not set to the video channel 3 or 4. • Check the unit is connected correctly. • The video input selector of the TV is not set to VIDEO. Set to VIDEO (or equivalent). • Channel is set to the external mode.	14–17 22 14–19 – –
No sound.	• Check the unit is connected correctly. • Check the input selector of the amplifier is set properly. • The unit is in the Special playback mode.	14–19 – 31,34
The remote control does not function.	• Aim at the remote control at the remote sensor. • Operate within Approx. 7 Meters or reduce the light in the room. • Clear the path of the beam. • The batteries are weak. Replace the batteries. • Check the batteries are inserted correctly. • Check the frequency code is set correctly.	13
No CATV reception	• Check all CATV connections. • Station or CATV system problems, try another station.	16,17
VCR		
TV recording does not work.	• The erase prevention tab of the video cassette is broken off. • The unit is in the external input mode.	29,34
Timer recording does not work.	• The time is not set correctly. • The recording start/end time is not correctly. • The TIMER has not been pressed (⏲ is not lit).	24 37 37
Noise bars on screen.	• Tracking adjustment beyond range of automatic tracking circuit. Try Manual tracking adjustment. • Video heads are dirty. • The tape is worn or damaged.	31 31 –
DVD		
Display is not shown in your language.	• Select proper language in the menu options.	59
Playback doesn't start.	• No disc is inserted. • The disc may be dirty. Clean up the disc. • The unit cannot play DVD-ROMs, etc.	42 42 42
Stopping playback, slow-motion play, repeat play, or memory play, etc. cannot be performed.	• Some discs may not do some of the functions. • When you press VCR MENU while watching a DVD with the connections of the DVD exclusive terminal (S-VIDEO cable or COMPONENT cable) to a TV, you cannot perform all the DVD functions. In this case, wait for approx. 60 seconds with no pressing of any buttons.	– –
No 4:3 (16:9) picture	• The setup does not match your TV.	58
No on-screen display	• Select Display On.	61
No surround sound	• The setup does not match your stereo system.	58
The unit or remote operation key is not functioning.	• Turn off the unit and unplug the AC power cord for several minutes, then replug it.	–
Playback does not start when the title is selected.	• Check the Parental setup.	61
Audio soundtrack and/or subtitle language is not changed when you play back a DVD.	• Multilingual language is not recorded on the DVD disc.	52
No subtitle	• Some discs have no subtitles. • Subtitles are cleared. Press SUB TITLE.	51
Angle cannot be changed.	• Multi-angles are not recorded on the DVD disc.	50
⃠ appears on the screen.	• The function is prohibited with the unit or the disc.	–

Specifications

General / input / output / supplied accessories

GENERAL

Power supply	AC 120V 60Hz
Power consumption	Operation: 20W, Stand by: 4W
Weight	9.9lbs (4.5 kg)
Dimensions	Width : 16-15/16 inches (430 mm) Height : 3-7/8 inches (99 mm) Depth : 12-3/8 inches (314.5 mm)
Tuner	181 channel freq. synthesized VHF 2-13 UHF 14-69 CATV 113 Channels
Antenna input/output	UHF/VHF In/Out : 75 ohm coaxial
RF channel output	Channel 3 or 4, Switchable
Color system	NTSC
Video head	4 Rotary heads
Audio track	Hi-Fi sound - 2 Tracks / MONO sound - 1 Track
Hi-Fi frequency response	20Hz to 20,000Hz
Hi-Fi dynamic range	More than 90dB
F.FWD/REW time at 25˚C (77˚F)	Approx. 1minute and 48 seconds (with T-120 Cassette Tape)
Applicable disc	DVD (12cm, 8cm), CD (12cm, 8cm)
Frequency range	DVD linear sound: 48 kHz sampling 4Hz-22kHz 96 kHz sampling 4Hz-44 kHz
S/N ratio	90dB
Harmonic distortion	0.01%
Wow and flutter	Below measurable level
Dynamic range	90dB
Operating conditions	Temperature: 5˚C-40˚C (41˚F-104˚F), Operating status: Horizontal

Input/Output

DVD/VCR	
Video input	1.0 V (p-p), 75 Ω, negative sync., pin jack x 2
Video output	1.0 V (p-p), 75 Ω, negative sync., pin jack x 1
Audio input	300mV (rms), 50kΩ. negative sync., pin jack (L/R) x 2
Audio output	300mV (rms), 1kΩ. negative sync., pin jack (L/R) x 1
DVD	
S video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., Mini DIN 4-pin × 1 (C) 0.286 V (p-p), 75 Ω
Component video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., pin jack × 1 (P_B)/(P_R) 0.7 V (p-p), 75 Ω, pin jack × 2
Audio output (BITSTREAM/PCM COAXIAL)	0.5V (p-p), 75 Ω, pin jack × 1
Audio output (BITSTREAM/PCM OPTICAL)	Optical connector × 1
Audio output (ANALOG)	2.0 V (rms), 220 Ω, pin jacks (L, R) × 1

Supplied accessories

Audio/video cable 1
Remote control (SE-R0066) 1
Batteries (AAA) 2
75 ohm coaxial cable 1

• Designs and specifications are subject to change without notice.

LIMITED WARRANTY DVD VIDEO PLAYER

Toshiba America Consumer Products, Inc. ("TACP"), Toshiba Hawaii ("THI") and Toshiba Canada Limited ("TCL") make the following limited warranties. These limited warranties extend to original purchaser or any person receiving this set as a gift from the original purchaser and to no other purchaser or transferee.

Limited Ninety (90) Day Warranty
TACP/THI warrant this product against defects in materials or workmanship for a period of ninety (90) days after the date of original retail purchase. During this period, TACP/THI will repair or replace a defective product or part, at their option, with a new or refurbished product or part without charge to you. You must deliver the entire product to a TACP/THI Authorized Service Station. You are responsible for all transportation and insurance charges for the unit to and from the Authorized Service Station. If you live in the U.S.A. you may, at your option, return your DVD Unit to:

Toshiba America Consumer Products Inc.
Returns Center
1420C Toshiba Dr.
Lebanon, TN 37087

Upon receipt we will, at our option, exchange the DVD Unit with a new or refurbished unit. **Canadian consumers are requested to contact TCL. In Hawaii consumers are requested to contact THI.**

Limited One (1) Year Warranty
TACP/THI further warrant the parts in this product against defects in materials or workmanship for a period of one (1) year after the date of original retail purchase. During this period, TACP/THI will repair or replace a defective product or part, at their option, with a new or refurbished product or part without charge to you, except that if a defective part is replaced after ninety (90) days from the date of the original retail purchase you pay labor charges involved in the replacement. You must also deliver the entire product to a TACP/THI Authorized Service Station. You are responsible for all transportation and insurance charges for the unit to and from the Authorized Service Station. If you live in the U.S.A. you may, at your option, return your DVD Unit to:

Toshiba America Consumer Products Inc.
Returns Center
1420C Toshiba Dr.
Lebanon, TN 37087

Upon receipt we will, at our option, exchange the DVD Unit with a new or refurbished unit. **Canadian Consumers are requested to contact TCL. In Hawaii consumers are requested to contact THI.**

Rental Units
The warranty for rental units begin with the first rental or thirty (30) days from the date of shipment to the rental firm, whichever comes first.

Commercial Units
Products sold and used for commercial use have a limited ninety (90) day warranty for all parts and labor.

Owner's Manual
You should read the owner's manual thoroughly before operating this product. You should complete and mail the enclosed Demographic card within ten (10) days after you, or the person who has given you this product as a gift, purchased this product. This is one way to enable TACP to provide you with better customer service and improved products. Failure to return the card will not affect your rights under this warranty.

Your Responsibility
The above warranties are subject to the following conditions:

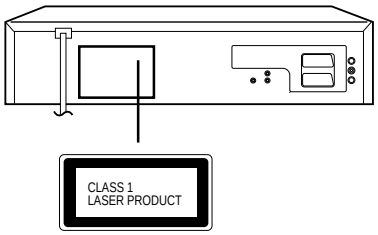
(1) You must retain your bill of sale or provide other proof of purchase.
(2) You must notify a TACP/THI/TCL /Authorized Service Station within thirty (30) days after you discover a defective product or part.
(3) All warranty servicing of this product must be made by a TACP/THI/TCL Authorized Service Station.
(4) U.S.A. warranties are effective only if the product is purchased and operated in the Continental U.S.A. or Puerto Rico.
(5) Labor service charges for set installation. Set up, adjustment of customer controls and installation or repair of antenna systems are not covered by this warranty. Reception problems caused by inadequate antenna systems are your responsibility.
(6) Warranties extend only to defects in materials or workmanship as limited above and do not extend to any product or parts which have been lost or discarded by you or to damage to products or parts caused by misuse, accident, damage caused by Acts of God, such as lighting or fluctuations in electric power, improper installation, improper maintenance or use in violation of instructions furnished by us; or to units which have been altered or modified without authorization of TACP/THI/TCL or to damage to products or part thereof which have had the serial number removed, altered, defaced or rendered illegible.
(7) Should you elect to return your DVD Unit to TACP after the ninety (90) days and within one (1) year, or after the warranty period has expired: Call (800)-631-3811 to receive information concerning an exchange price. Payment must be enclosed with product in the form of a certified check or money order including reason for return.
(8) Physically damaged DVD Units are not acceptable for repair or exchange whether in or out of warranty and will be returned as received.

(Continued)

IMPORTANT WARNING

CAUTION:
DVD PLAYER IS A CLASS 1 LASER PRODUCT. HOWEVER THIS PLAYER USES A VISIBLE LASER BEAM WHICH COULD CAUSE HAZARDOUS RADIATION EXPOSURE IF DIRECTED. BE SURE TO OPERATE THE PLAYER CORRECTLY AS INSTRUCTED.

THE FOLLOWING CAUTION LABEL IS LOCATED ON THE REAR PANEL OF THE PLAYER.



(Printed on the Rear Panel)

WHEN THIS PLAYER IS PLUGGED TO THE WALL OUTLET, DO NOT PLACE YOUR EYES CLOSE TO THE OPENING OF THE DISC TRAY AND OTHER OPENINGS TO LOOK INTO THE INSIDE OF THIS PLAYER.

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

DO NOT OPEN COVERS AND DO NOT REPAIR YOURSELF. REFER SERVICING TO QUALIFIED PERSONNEL.

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

3. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

4. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)
1. MODEL NUMBER and VERSION LETTER
   The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet, Front Cabinet and DVD Block and the Fig. 1 below can be seen. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Remove one screw of the Loading Motor from the insert hole for screw driver and remove the Loading Motor.
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape. **(Refer to Fig. 2)**
4. Rotate the Clutch Ass'y either of the directions to wind the Video Tape in the Cassette Case.
5. Repeat the above step 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch on the tape.

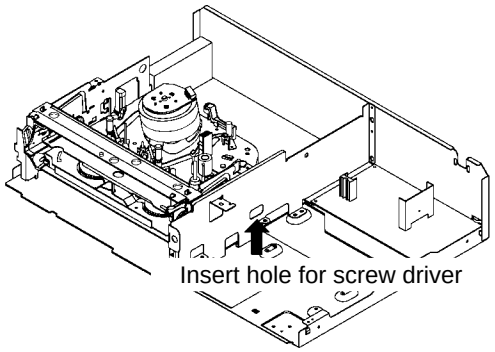


Fig. 1

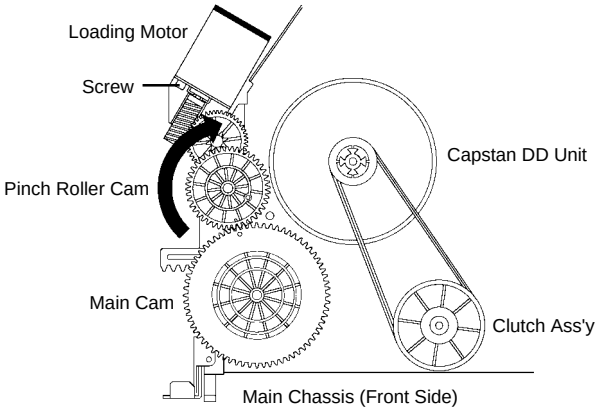


Fig. 2

DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet and Front Cabinet. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Rotate the gear of Deck CD section in the direction of the arrow by hand, remove the disc from Deck CD. **(Refer to Fig. 3)**

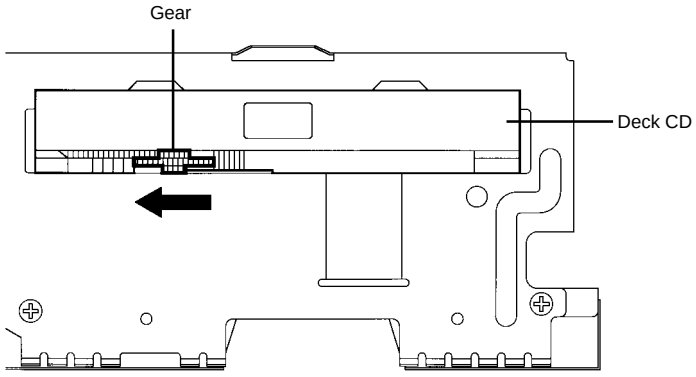


Fig. 3

PARENTAL CONTROL - RATING LEVEL

4-DIGIT SECURITY CODE CANCELLATION

If the stored 4-digit security code in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Connect the set to TV Monitor.
2. Turn on the power, and set to the DVD stop mode.
3. Press the SET UP button to display the DVD menu.
4. Press the SET +/- button to select the "Operation" menu.
5. Press the CH UP/DOWN button to select the Parental Lock, then press the ENTER button.
6. Press the CH UP/DOWN button to select the ON or OFF, then press the ENTER button.
7. Press the STOP button four times on the remote control, then press the ENTER button. The 4-digit security code is cleared.
8. Press the SET UP button to disappear the DVD menu.

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GENERAL SPECIFICATIONS

G-1	**Outline of the product**				DVD VIDEO PLAYER & VHS Player / Recorder
G-2	**DVD System**	Color System			NTSC
		Disc			DVD, CD-DA, CD-R/RW, VIDEO CD
		Disc Diameter			120 mm , 80 mm
		Deck	Disc Loading System		Front Disc Loding
			Motor		3 Motors
		Pick up			1-Lens 2-Beams System
		Playback time (Max)	DVD 1-Layer		135min (4.7GB)
					245min (8.5GB)
			CD		74min
			VIDEO CD		74min
		Search speed			Fwd 2-100 times / 4 step (DVD)
					4-8 times / 2 step (CD)
					5-15 times / 2 step (VIDEO CD)
				Actual	2-70 times (DVD)
					4-12times (CD)
					4-20times (VIDEO CD)
					Rev 2-100 times / 4 step (DVD)
					4-8 times / 2 step (CD)
					5-15 times / 2 step (VIDEO CD)
				Actual	2-70 times (DVD)
					4-16times (CD)
					4-20times (VIDEO CD)
		Slow speed			Fwd 1/8-1/2 times (DVD, VIDEO CD)
				Actual	1/7-1/2 times (DVD, VIDEO CD)
					Rev --
				Actual	--
G-3	**VCR System**	System			VHS Player / Recorder
		Video System			NTSC
		Hi-Fi STEREO			Yes
		NTSC PB(PAL60Hz)			No
		Deck	DECK		OVD-7
			Loading System		Front
			Motor		3
		Heads	Video Head		4Head
			FM Audio Head		2Head
			Audio /Control		Mono/Yes
			Erase(Full Track Erase)		Yes
		Tape Speed	Rec PAL		-
			Rec NTSC		SP/SLP
			Play PAL		-
			Play NTSC		SP/LP/SLP
		Fast Forward / Rewind Time (Approx.) at 25oC			FF:1'48"/REW:1'48"
				with Cassette	T-120
		Forward/Reverse Picture Search	NTSC or PAL-M		SP/LP/SLP = 3x,5x / 7x,9x / 9x,15x
			PAL or SECAM		-
		Frame Advance			1/10
		Slow Speed			1/10
G-4	**Tuning System**	Broadcasting System			US System M
		Tuner and Receive CH	System		1Tuner
			Destination		US(w/CATV)
			Tuning System		F-Synth
			Input Impedance		VHF/UHF 75 OHM
			CH Coverage		2-69,4A,A-5~ A-1,A~I, J~ W, W+1-W+84
		Intermediate Frequency	Picture(FP)		45.75 MHz
			Sound(FS)		41.25 MHz
			FP-FS		4.50 MHz
		Preset CH			-
		RF Converter Output			Yes
			Channel		3 or 4 ch
			Level/Impedance		66 dBu / 75 Ohm
			Sound Selector		No
		Stereo/Dual TV Sound			US-ST
		Tuner Sound Muting			Yes

GENERAL SPECIFICATIONS

G-5	**Power**	Power Source	AC	120V 60Hz
			DC	-
		Power Consumption		20 W at 120V 60Hz
			Stand by	4 W at 120V 60Hz
			Per Year	-- W
		Protector	Power Fuse	Yes
G-6	**Regulation**		Safety	UL / CSA
			Radiation	FCC / IC
			Laser	DHHS
G-7	**Temperature**		Operation	5oC - 40oC
			Storage	-20oC - 60oC
G-8	**Operating Humidity**			Less then 80% RH
G-9	**Signal**	Video Signal	Output Level	1 V p-p/75 ohm (DVD,VCR)
			S/N Ratio (Weighted)	65 dB(DVD) 50 dB(VCR)
			Horizontal Resolution	500 Lines (DVD) 230 Lines(VCR Mode)
		RGB Signal	Output Level	-
		Audio Signal	Input Level Microphone	-
			Input Level Line	-8 dBm/ 50k ohm(VCR)
		(0dB=0.775Vrms)	Output Level Line	-8 dBm/ 1k ohm(DVD,VCR)
			Digtal Output Level	0.5 V p-p / 75 ohm(DVD)
			S/N Ratio at (Weighted)	90dB(DVD), 42dB(VCR at SP)
			Harmonic Distortion (1KHz) Typical	0.008% (DVD), 1.5% (VCR)
			Frequency Response : DVD Mode at DVD	4 Hz - 22 KHz
			DVD Mode at VIDEO CD	4 Hz - 20 KHz
			DVD Mode at CD	4 Hz - 20 KHz
			VCR Mode at SP	100Hz - 10 KHz
			VCR Mode at LP	-
			VCR Mode at SLP	100Hz - 4 KHz
		Hi-Fi Audio Signal	Dynamic Range : More than	90dB
			Frequency Response	20Hz ~20kHz
			Wow And Flutter : Less than	0.01 %Wrms
			Channel Separation : More than	60 dB
			Harmonic Distortion : Less than	0.01

GENERAL SPECIFICATIONS

G-10	**On Screen Display**	(DVD)	Menu		Yes
				Menu Type	Icon
			Picture		Yes
				TV Shape	Yes
			Output Sound		Yes
				Audio Out Select	Yes
				Dynamic Range Control	Yes
				Karaoke Vocal	Yes
			Language		Yes
				On-Screen Language	Yes
				Disc Menu Language	Yes
				Audio Language	Yes
				Subtitle Language	Yes
			Display		Yes
				On-Screen Displays	Yes
				Background	Yes
				Screen Saver	Yes
			Operational		Yes
				Pause/Still	Yes
				Parental Lock	Yes
				Title Stop	Yes
				PBC	Yes
			Initial Setup		Yes
				On-Screen Language	Yes
				TV Shape	Yes
				Audio Out Select	Yes
			Open		Yes
			Close		Yes
			No disc		Yes
			Reading		Yes
			Play		Yes
			Still/Pause		Yes
			Stop		Yes
			Prohibit Mark		Yes
			Step		Yes
			Skip+		Yes
			Skip-		Yes
			Random		Yes
			Repeat		Yes
			A-B Repeat		Yes
			Slow+ ##		Yes
			Slow- ##		No
			Search+ ##		Yes
			Search- ##		Yes
			Resume		Yes
			Title No.		Yes
			Chapter No.		Yes
			Track No.		Yes
			Time		Yes
			Sub Title No.		Yes
			Angle No.		Yes
			Audio No.		Yes
			Zoom		Yes
			Enter		Yes
			Exit		Yes
			Bit Rate		Yes
			Memory		Yes
			Screen Saver		Yes
			E.A.M		Yes

GENERAL SPECIFICATIONS

	On Screen Display(VCR)	Menu			Yes
			Menu Type		Character
			Timer Rec Set		Yes
			Auto Repeat On/Off		Yes
			SAP On/Off		Yes
			Surround On/Off		No
			CH Set-Up		Yes
				TV/CATV	Yes
				Auto CH Memory	Yes
				Add/Delete	Yes
				Guide CH	No
			System Set Up		Yes
				Clock Set	Yes (Calendar 12H)
				Language	Yes
				No Noise Back Ground	Yes
				Auto Clock	Yes
				Standard Time	Yes
				Daylight Saving Time	Yes
		G-CODE(or SHOWVIEW or PLUSCODE)No. Entry			No
		Stereo,Audio Output,SAP			Yes
		Play/Stop/FF/Rew/Rec/OTR/T-Rec/Pause/Eject/Tape In/Repeat (Symbol Mark)			Yes
				CH/AV	Yes
				Clock	Yes
				Repeat	Yes
				Pin Code	No
				Tape Counter	Yes
				Index	Yes
				Hotel Lock	No
				Tape Speed	Yes
				ATR / Manual Tracking	Yes
				Hi-Fi	Yes
G-11	**OSD Language**		DVD OSD		Eng Fre Spa
			VCR OSD		Eng Fre Spa
G-12	**Clock,Timer and Timer Back-up**	Calendar			1990/1/1 ~ 2081/12/31
		Timer Events			8 Program/ 1 Month
		One Touch Recording Max Time			5 Hours(30,60,90,120,180,240,300)
		OTPB Valid Time			No
		Timer Back-up (at Power Off Mode)			5sec
G-13	**Display**	DISPLAY			Yes
				DISPLAY type	Fluorescent Indicator
			Clock/Counter,CH,Timer Rec,OTR, Play Rec,FF(Cue),Rew(Rev),Stop,ATR,Eject		No
				VCR	Yes
				DVD	No
				CD	No
				Clock	Yes (12h)
				AM	No
				PM	Yes
				Counter VCR	Yes (hour:min:sec)
				DVD	Yes (hour:min:sec)
				CD	Yes (min:sec)
				Counter Remain	No
				Play	Yes
				Stop	No
				Rec	Yes
				FF / Cue	No
				REW /Review	No
				Pause/Still	No
				OTR	No
				T-Rec	Yes
				Chapter	No
				TITLE	No
				TRACK	Yes
				Repeat	No
				Hi-Fi	No
				SP	Yes
				LP	Yes
				SLP(EP)	Yes
				CH	Yes
				RF Output CH	No
				Tape In	Yes
				Eject	Yes
				PBC(Play Back Control)	Yes

GENERAL SPECIFICATIONS

G-14	**Remote Control**	Unit		RC-FE
		Glow in Dark Remocon		No
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		45 Key
		Keys	Power	Yes
			DISPLAY/CALL	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0	Yes
			Input Select	Yes
			UP/CH+-	Yes
			DOWN/CH-	Yes
			LEFT/ SET- / TRACKING-	Yes
			RIGHT/ SET+ / TRACKING+	Yes
			VCR/DVD	Yes
			TV/VCR	Yes
			DVD MENU	Yes
			TITLE	Yes
			SET UP MENU/VCR MENU	Yes
			SELECT/ENTER	Yes
			CLEAR/CANCEL	Yes
			RETURN	Yes
			PLAY	Yes
			STOP	Yes
			PAUSE/STILL	Yes
			FF(Cue)/SEARCH+	Yes
			REW(Review)/SEARCH-	Yes
			REC/OTR	Yes
			SKIP+ / INDEX+	Yes
			SKIP- / INDEX-	Yes
			AUDIO / AUDIO SELECT	Yes
			ANGLE/COUNTER RESET	Yes
			SUB TITLE/ATR	Yes
			PLAY MODE/SPEED	Yes
			T-REC	Yes
			CLOCK / COUNTER	Yes
			MEMORY/ZERO RETURN	Yes
			ZOOM/CM SKIP	Yes
			REPEAT A-B	Yes
			SLOW(Forward)	Yes
			MARKER	No
			OPEN/CLOSE	Yes
			EJECT	Yes

GENERAL SPECIFICATIONS

G-15	Features (DVD)	Auto Power Off		No
		Parental Lock		Yes
		Video CD Playback		Yes
		MP3 Playback		Yes
		Digital Out	Dolby Digtal	Yes
			PCM	Yes
			DTS	Yes
			MPEG1,MPEG2	Yes
		Down Mix Out	(Dolby Digtal, MPEG1,MPEG2)	Yes
		Self Diagnostic		No
		Spatializer (N-2-2)		Yes
		Screen Saver		Yes
	Features (VCR)	Auto Head Cleaning		Yes
		Auto Tracking		Yes
		HQ (VHS Standard High Quality)		Yes
		Auto Power On, Auto Play, Auto Rewind, Auto Eject		Yes
		Auto Power Off		No
		Forward/Reverse Picture Search		Yes
		VIDEO PLUS+(SHOWVIEW,G-CODE)		No
		One Touch Playback		No
		Auto CH Memory		Yes
		AREA CODE		No
		Auto Clock Set		Yes
		Index Search		Yes
		SQPB		Yes
		CATV		Yes
		Energy Star		No
		MTS(SAP)		Yes
		CM Skip(30sec x 6 Times)		Yes
		Power On Memory		No
		Surround		No
G-16	Accessories	Owner's Manual	Language	English
			w/Guarantee Card	Yes
		Remote Control Unit		Yes
		Guarantee Card		No
		Warning Sheet		No
		Service Station List		No
		Important Tag		No
		AC Plug Adapter		No
		Quick Set-up Sheet		Yes (Spanish)
		Battery		Yes
			UM size x pcs	UM-4 x 2 pcs
		AC Cord		No
		AV Cord		Yes (1.2m)
		75 Ohm Coaxial Cable		Yes (1.2m)
		S-Video Cable		No
		21pin cable		No
		800 No Sticker		No
		Toll Free Insert Sheet		No
		Registration Card		Yes
		Safety Tip		No

GENERAL SPECIFICATIONS

G-17	**Interface**	Switch	Front	Power	Yes
				Play	Yes
				Eject (VCR)	Yes
				Stop	Yes
				Rec/OTR	Yes
				Open/Close (DVD)	Yes
				CH +	Yes
				CH -	Yes
				FF/ Search(>>)	Yes
				Rew/Search(<<)	Yes
				Still/Pause	No
				Shuttle(Search/REV/FWD)	No
				DVD/VCR	Yes
				Input Select	Yes
				Main Power SW	No
			Rear	Attenuator	No
				Video/RGB Selector	No
				RF Out(Slide SW)	Yes (3ch/4ch)
				Main Power SW	No
		Volume		Phones Volume	No
				Mic Volume	No
				Echo Volume	No
				Rec/OTR	No
		Terminals	Front	Video In	RCA x1(Black)
				Audio In	RCA x 2(Stereo, Black)
			Rear	Video Output	RCA x1(Yellow) S-Video x 1(DVD Signal Only) Component x1 (RCA 3pin,DVD Signal Only)
				Audio Output	RCA x 4(Stereo, White/Red) Coaxial x 1 (Digital Audio,DVD Signal Only)
				Optical Out (Option)	Yes (Digital Audio,DVD Signal Only)
				Video Input (Option)	RCA x 1 (Yellow)
				Audio Input (Option)	RCA x 2 (Stereo,Red/White)
				RF Input / Output	Yes
				Euro Scart	No
				AC Inlet	No
		Indicator	LED	Power	No
				Rec	No
				T-Rec	No
				TV/VCR	No
				DVD	Yes (GREEN)
				VCR	Yes (GREEN)
				Surround	No
				Level Meter	No
G-18	**Set Size**			Approx. W x D x H (mm)	430 x 314.5 x 99
G-19	**Weight**			Net (Approx.)	4.5 kg(9.9lbs)
				Gross (Approx.)	5.5 kg(12.1lbs)
G-20	**Carton**		Master Carton		No
				Content	--- Sets
				Material	--- / ---
				Dimensions W x D x H(mm)	---
				Description of Origin	---
			Gift Box		Yes
				Material	Single Full Color Carton
				W/Color Phote Label	No
				Dimensions W x D x H(mm)	500 x 430 x 180
				Design	As Per BUYER 's
				Description of Origin	Yes
			Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	80 cm
			Container Stuffing		1,595 Sets/40' container
G-21	**Cabinet Material**			Cabinet Front	PS 94V2 or More / DECABROM

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET AND FRONT CABINET (Refer to Fig. 1-1)

1. Remove the 5 screws ①.
2. Remove the Top Cabinet in the direction of arrow (A).
3. Disconnect the following connectors: (CP681, CP601).
4. Unlock the 8 supports ②.
5. Remove the Front Cabinet in the direction of arrow (B).

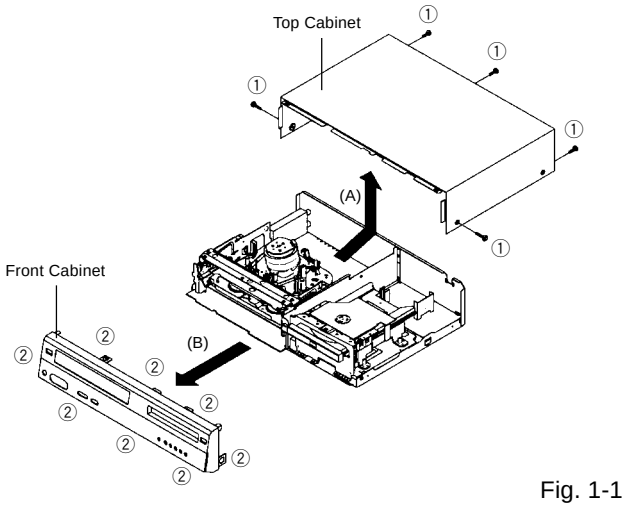


Fig. 1-1

1-2: DISPLAY PCB AND OPERATION 1/2 PCB (Refer to Fig. 1-2)

1. Remove the 11 screws ①.
2. Remove the Display PCB and Operation 1/2 PCB in the direction of arrow.

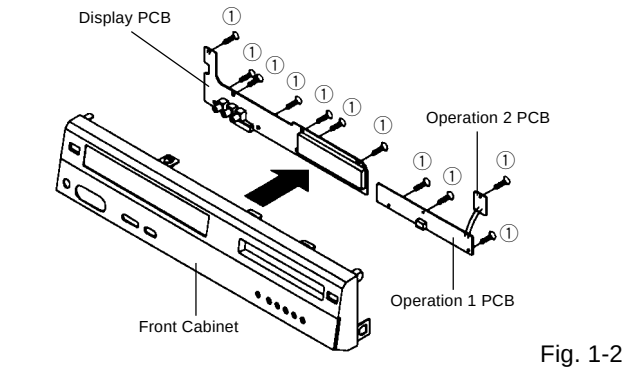


Fig. 1-2

1-3: FLAP (Refer to Fig. 1-3)

1. Open Flap to 90˚ and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).

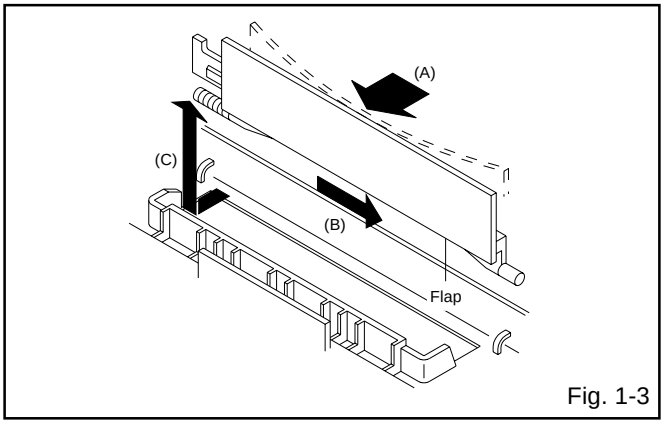


Fig. 1-3

1-4: DECK CD AND DVD PCB (Refer to Fig. 1-4)

1. Make the short circuit on the position as shown **Fig. 1-4** using a soldering. If you remove the Deck CD with no soldering, the Laser may be damaged.
2. Disconnect the following connectors: (CP503,CP8001, CP8002).
3. Remove the 4 screws ①.
4. Remove the Deck Angle in the direction of arrow (A).
5. Remove the 2 screws ②.
6. Remove the Front-DVD Shield in the direction of arrow (B).
7. Remove the 4 screws ③.
8. Disconnect the following connectors: (CP2601, CP2602 and CP2603).
9. Remove the Deck CD in the direction of arrow (C).
10. Remove the 4 screws ④.
11. Remove the DVD PCB in the direction of arrow (D).

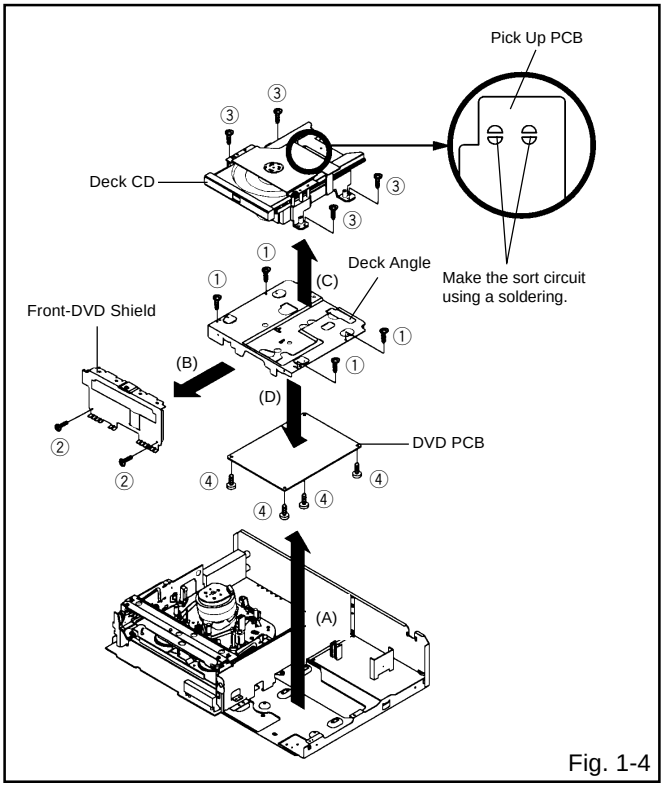


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

NOTE

When the installation of the Deck CD, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

1-5: VCR DECK (Refer to Fig. 1-5)

1. Unlock the 2 supports ① and remove the Top Holder.
2. Remove the 3 screws ②.
3. Disconnect the following connectors: (CP101, CP102, CP103 and CP3001).
4. Remove the AC Head Cover and VCR Deck in the direction of arrow.

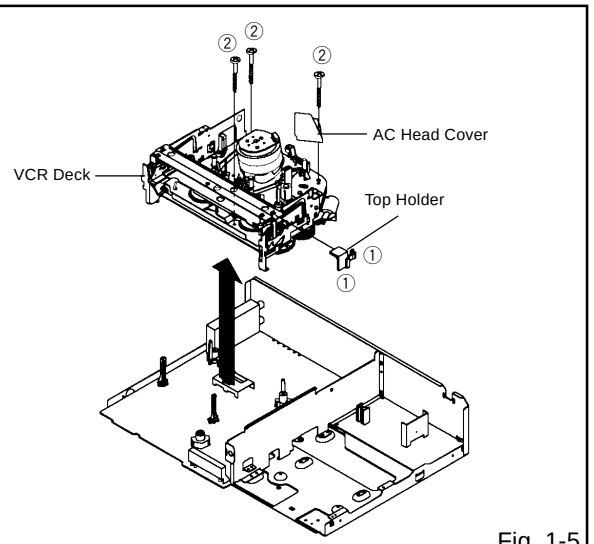


Fig. 1-5

1-6: VCR PCB (Refer to Fig. 1-6)

1. Remove the screw ①.
2. Remove the 8 screws ②.
3. Disconnect the following connector: (CP1701).
4. Remove the VCR PCB in the direction of arrow.

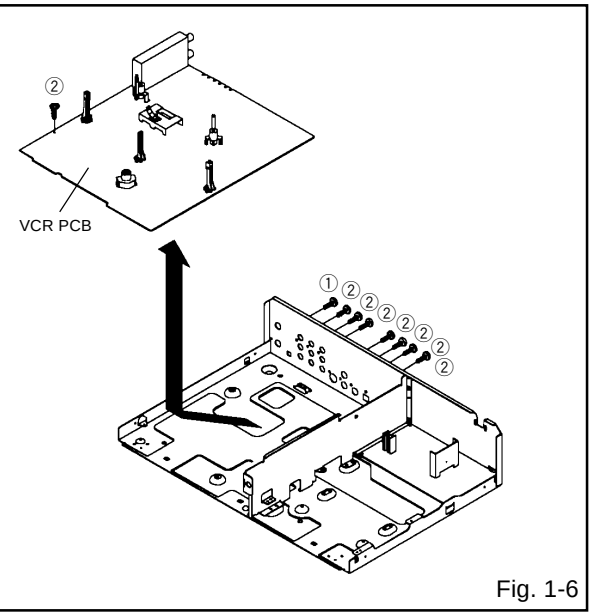


Fig. 1-6

1-7: POWER PCB (Refer to Fig. 1-7)

1. Remove the 3 screws ①.
2. Remove the Power PCB in the direction of arrow.

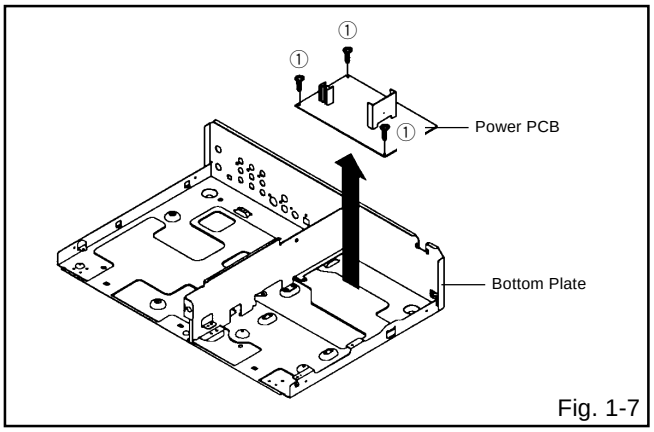


Fig. 1-7

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF VCR DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

1. After the installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.

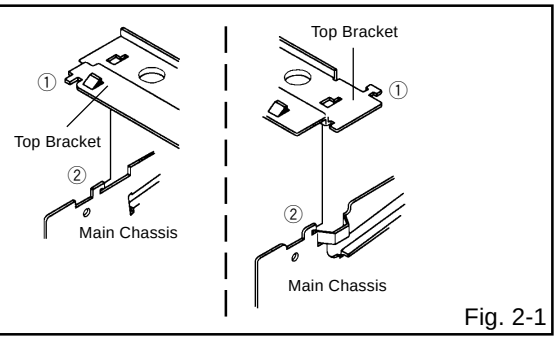


Fig. 2-1

2-2: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

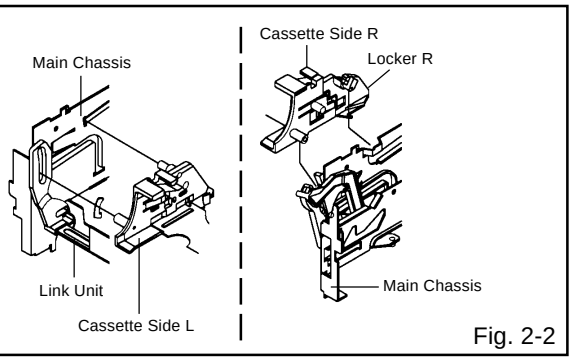


Fig. 2-2

2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.
3. Unlock the support ② and then remove the Locker R.

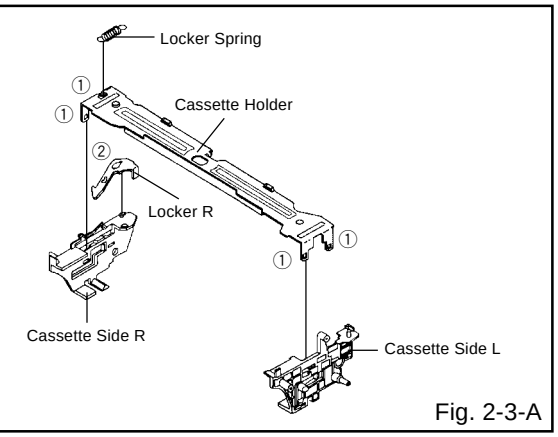


Fig. 2-3-A

NOTE

1. In case of the Locker R installation, check if the two positions of Fig. 2-3-B are correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.

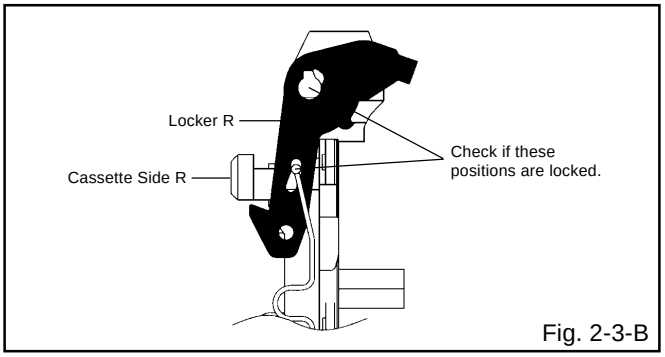


Fig. 2-3-B

2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.

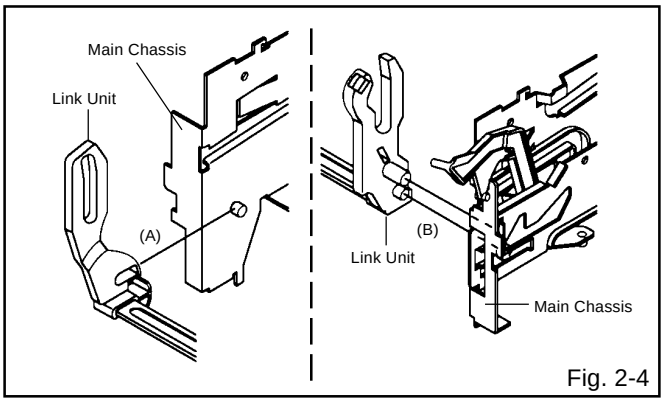


Fig. 2-4

2-5: LINK LEVER/FLAP LEVER (Refer to Fig. 2-5)

1. Extend the support ①.
2. Remove the Link Lever.
3. Remove the Flap Lever.

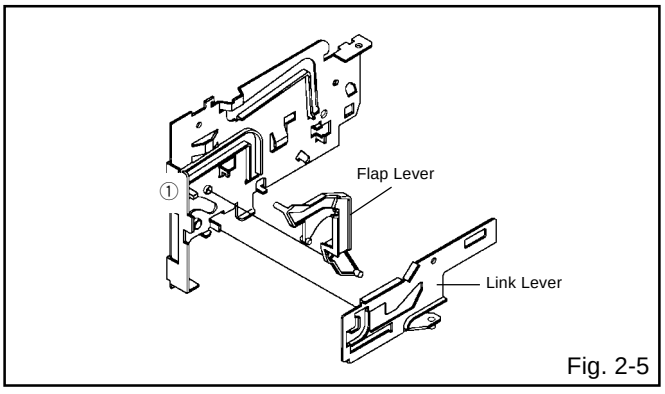


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.

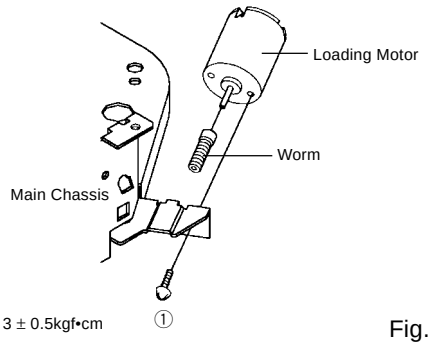


Fig. 2-6-A

NOTE

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.
2. In case of the Loading Motor installation, hook the wire on the Cassette Opener as shown Fig. 2-6-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-6-D.

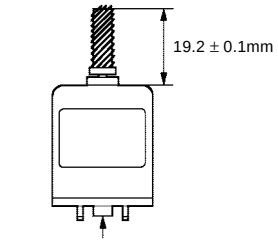


Fig. 2-6-B

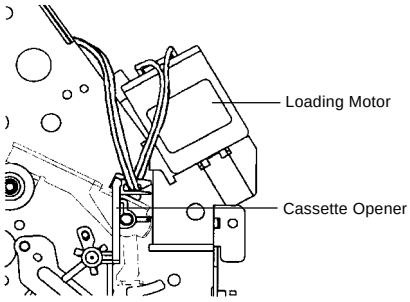


Fig. 2-6-C

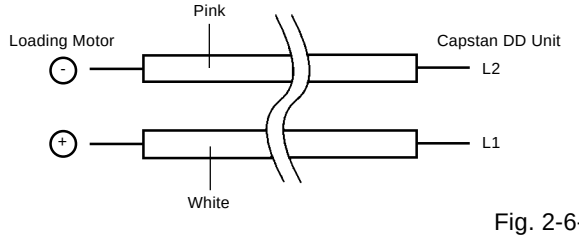


Fig. 2-6-D

2-7: TENSION ASS'Y (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Ass'y.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.

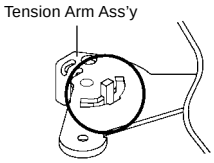


Fig. 2-7-A

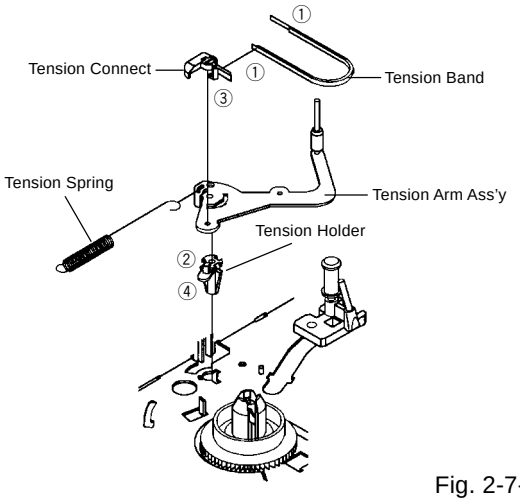


Fig. 2-7-B

NOTE

1. In case of the Tension Band installation, note the direction of the installation. **(Refer to Fig. 2-7-C)**
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.

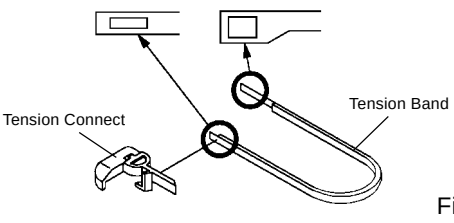


Fig. 2-7-C

DISASSEMBLY INSTRUCTIONS

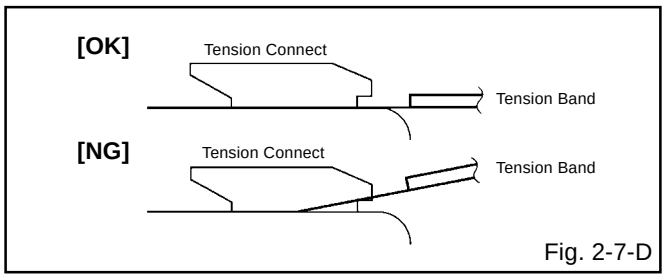


Fig. 2-7-D

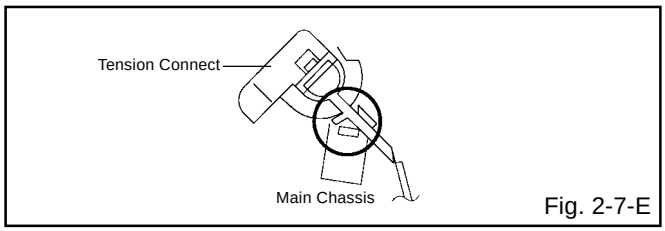


Fig. 2-7-E

2-8: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.

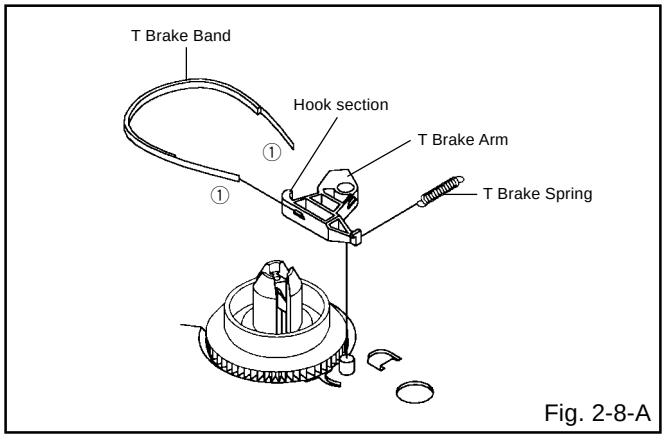


Fig. 2-8-A

NOTE

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

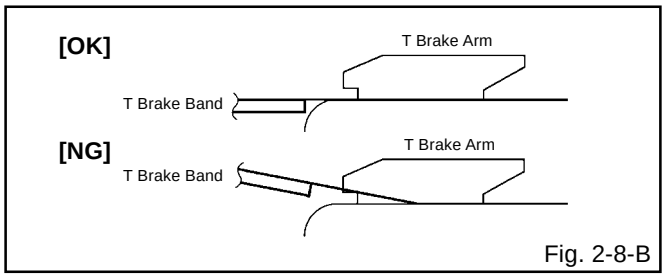


Fig. 2-8-B

2-9: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Ass'y and Idler Gear.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-9-A)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it. (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

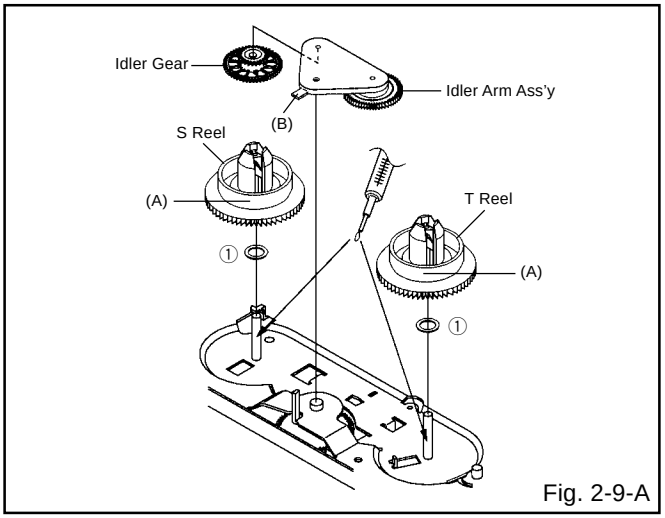


Fig. 2-9-A

NOTE

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. **(Refer to Fig. 2-9-B)**
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-9-C. And also set it so that the section "B" of Fig. 2-9-A is placed under the Main Chassis tab.

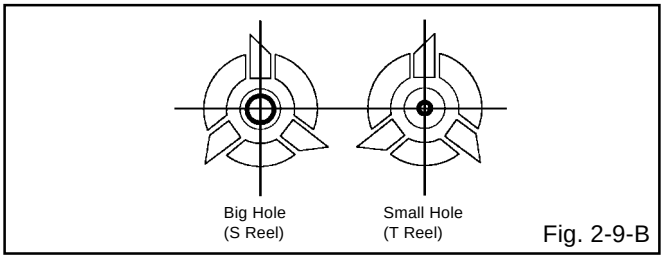


Fig. 2-9-B

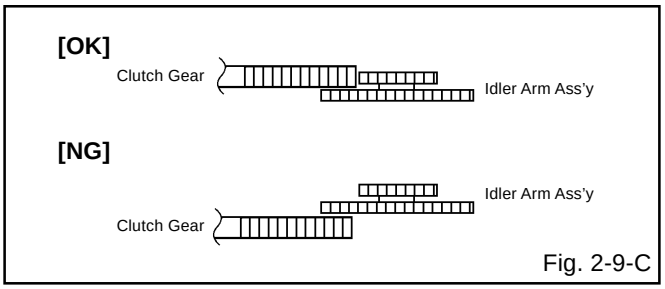


Fig. 2-9-C

DISASSEMBLY INSTRUCTIONS

2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/P5 ARM ASS'Y (Refer to Fig. 2-10-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Ass'y.

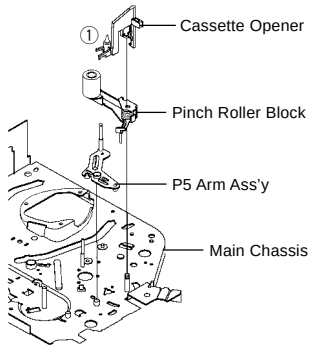


Fig. 2-10-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

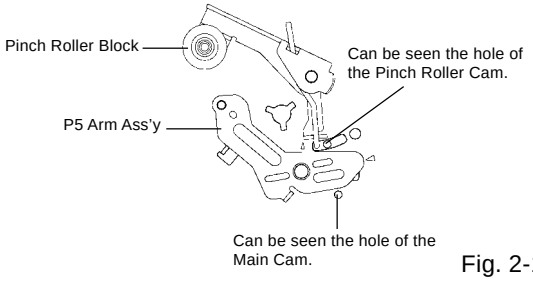


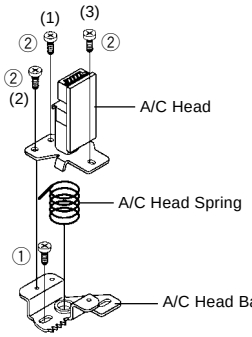
Fig. 2-10-B

2-11: A/C HEAD (Refer to Fig. 2-11-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).



• Screw Torque: 5 ± 0.5kgf•cm (Screw ①)

Fig. 2-11-A

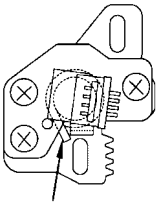
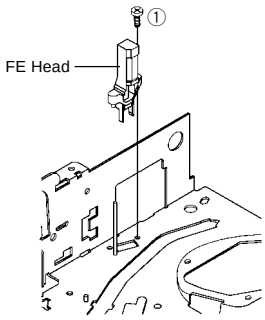


Fig. 2-11-B

2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw ①.
2. Remove the FE Head.



• Screw Torque: 5 ± 0.5kgf•cm
• The FE Head is not installed on the Video Cassette Player.

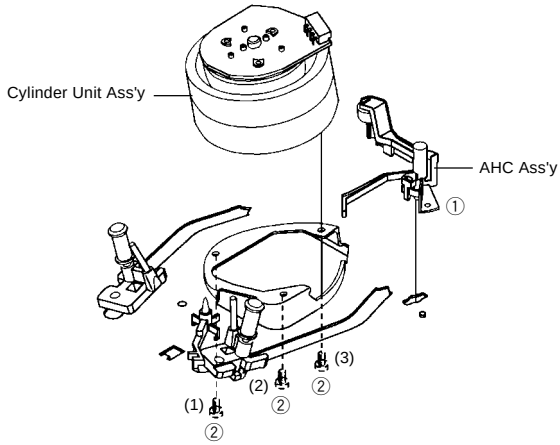
Fig. 2-12

2-13: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-13)

1. Unlock the support ① and remove the AHC Ass'y.
2. Disconnect the following connector: (CD2001)
3. Remove the 3 screws ②.
4. Remove the Cylinder Unit Ass'y.

NOTE

1. When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.



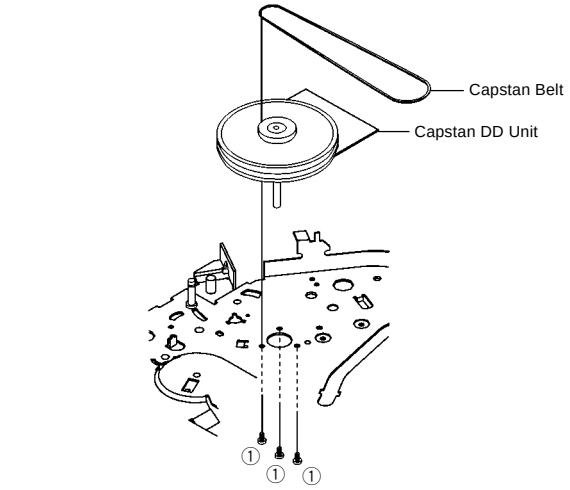
• Screw Torque: 3 ± 0.5kgf•cm

Fig. 2-13

DISASSEMBLY INSTRUCTIONS

2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14-A)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.



• Screw Torque: 4 ± 0.5kgf•cm

Fig. 2-14-A

NOTE

1. In case of the Capstan DD Unit installation, apply the silicon bond (TSE3843-W) on the position Fig. 2-14-B correctly. (If no silicon bond applied, abnormal noise will be heard on the deck operation.) **(Refer to Fig. 2-14-B, C)**

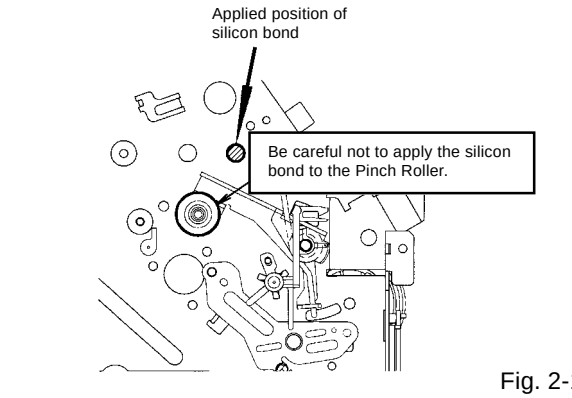


Fig. 2-14-B

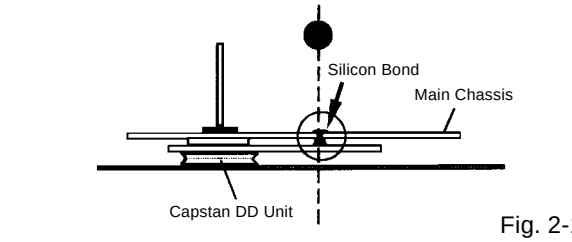


Fig. 2-14-C

2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.

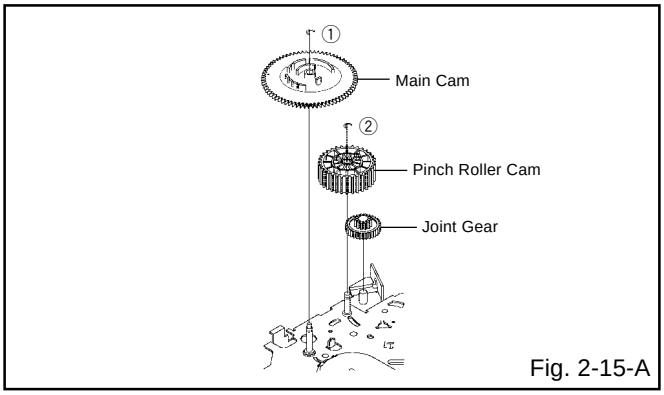


Fig. 2-15-A

NOTE

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. **(Refer to Fig. 2-15-B)** And also can be seen the Main Chassis hole through the Main Cam maker hole.

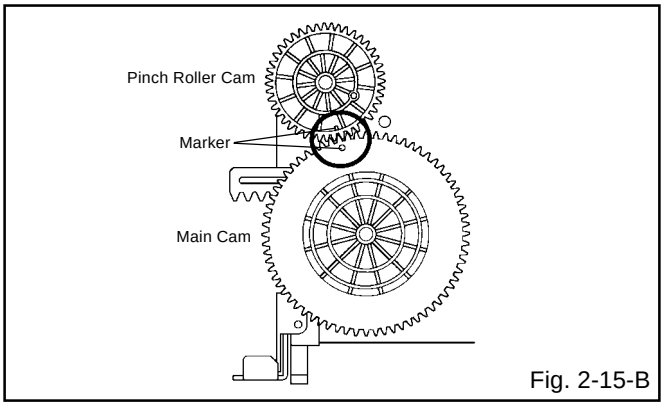


Fig. 2-15-B

2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.

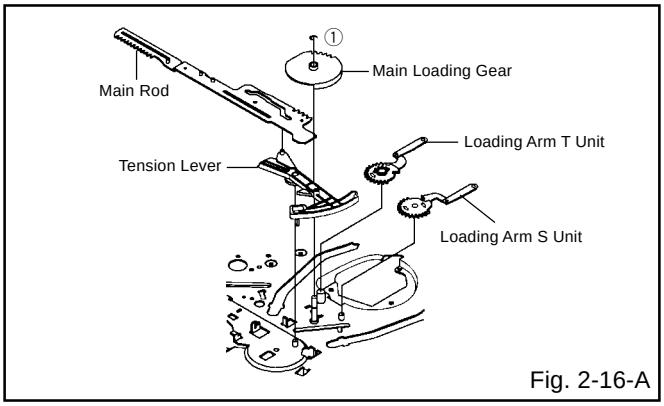


Fig. 2-16-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. **(Refer to Fig. 2-16-B)**

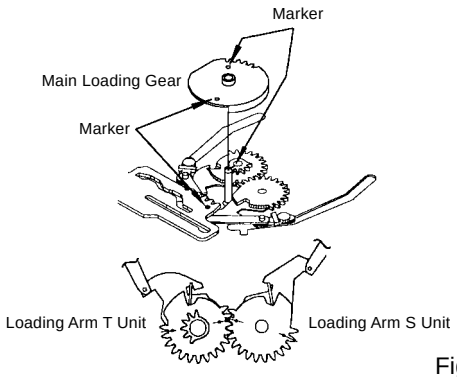


Fig. 2-16-B

2-17: CLUTCH ASS'Y/RING SPRING/CLUTCH LEVER/ CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.

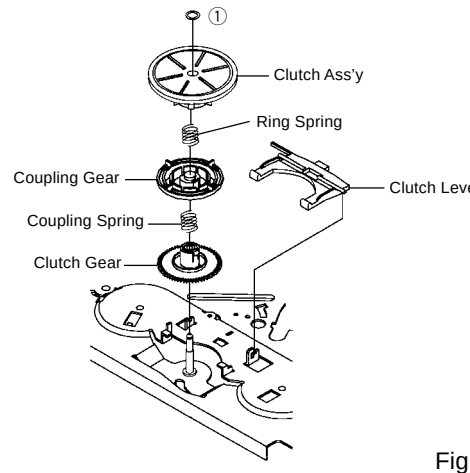


Fig. 2-17-A

NOTE

1. In case of the Clutch Ass'y installation, install it with inserting the spring of the Clutch Ass'y into the dent of the Coupling Gear. **(Refer to Fig. 2-17-B)**

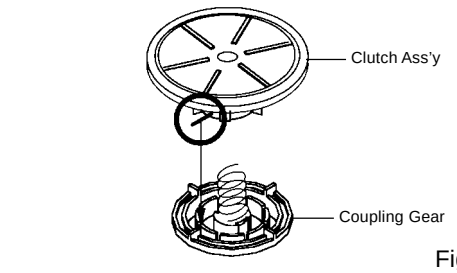


Fig. 2-17-B

2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S Unit and Inclined Base T Unit.

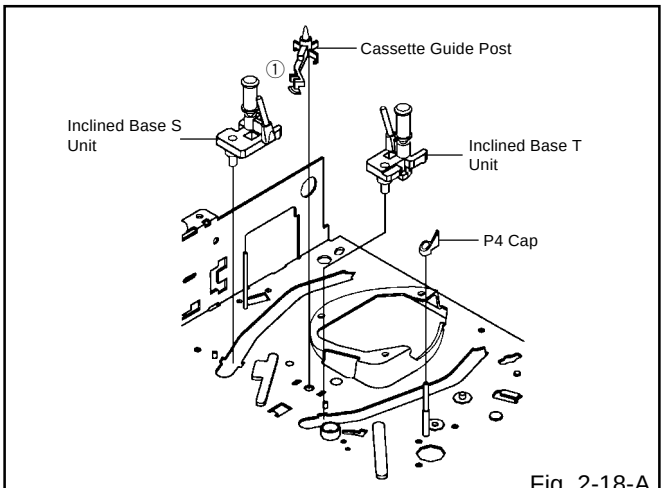


Fig. 2-18-A

NOTE

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.

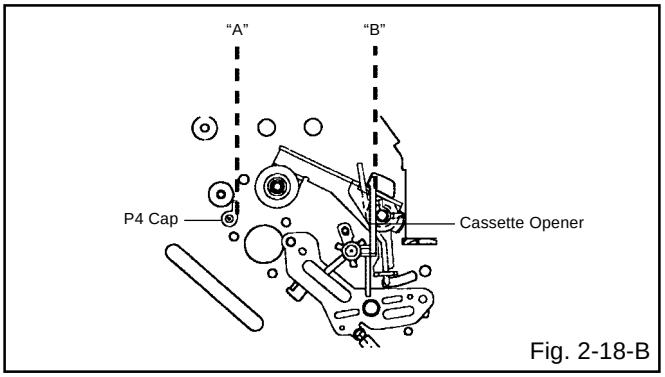


Fig. 2-18-B

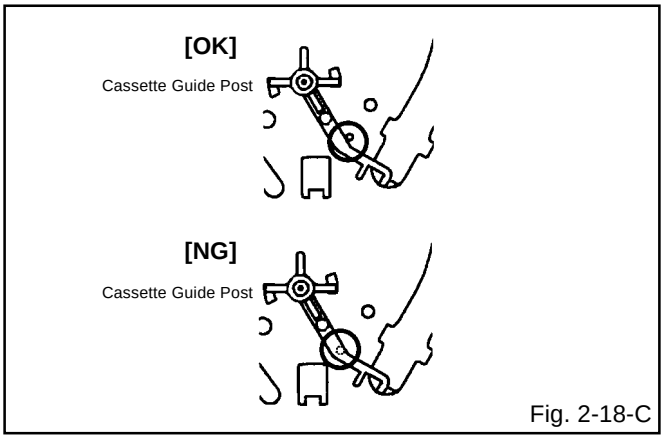


Fig. 2-18-C

DISASSEMBLY INSTRUCTIONS

3. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 3-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

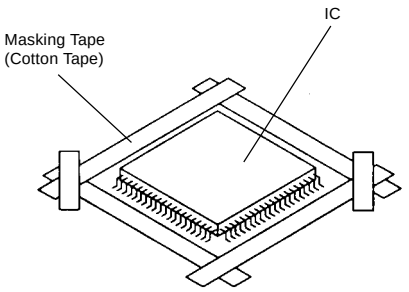


Fig. 3-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 3-2.)**

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

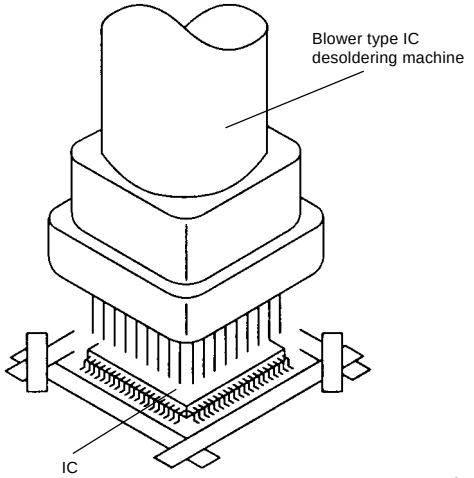


Fig. 3-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 3-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

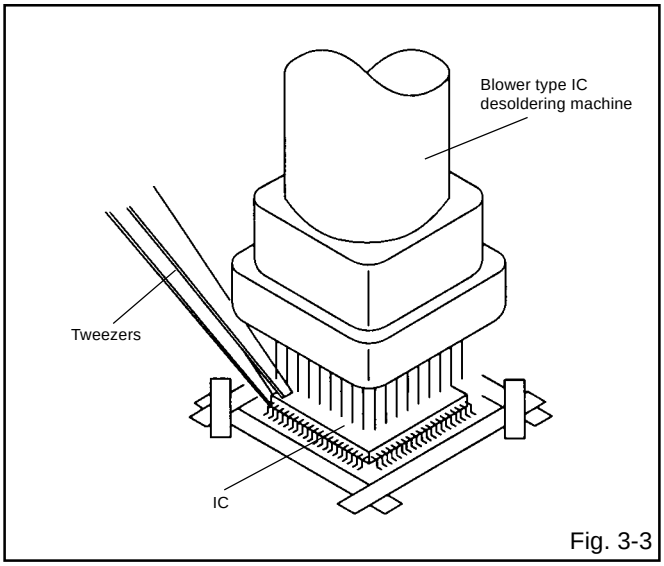


Fig. 3-3

4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 3-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

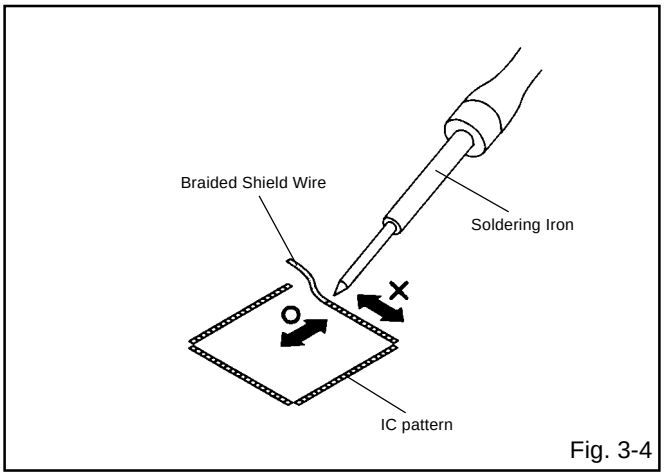


Fig. 3-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 3-5.)**

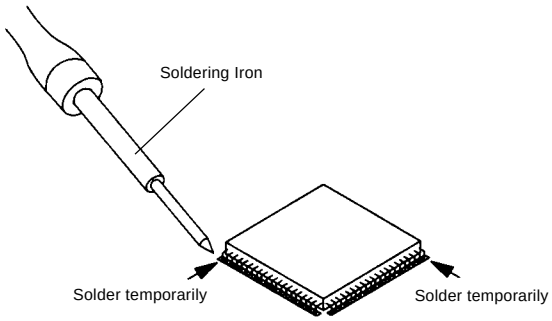


Fig. 3-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 3-6.)**

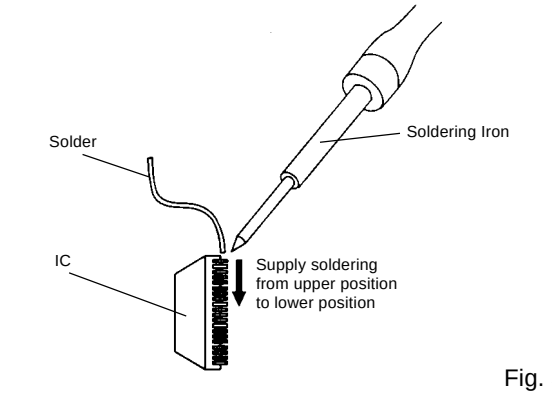


Fig. 3-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 3-7.)**

   NOTE

   Do not absorb the solder to excess.

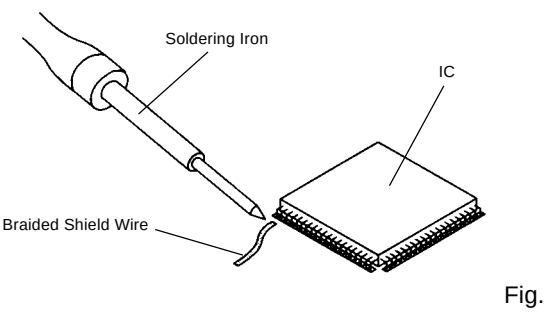


Fig. 3-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 3-8.)**

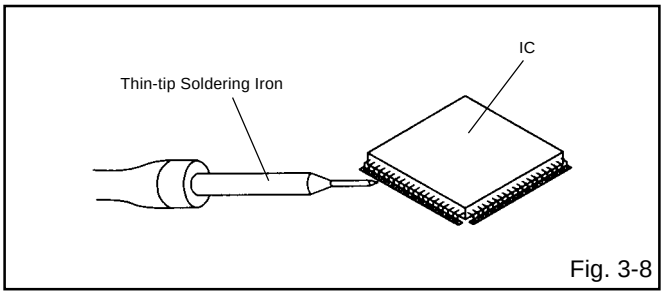


Fig. 3-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

KEY TO ABBREVIATIONS

A	**A/C**	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	**BGP**	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	**C**	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	**DATA (SY-CE)**	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	**E**	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	**F**	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flip-flop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	**GEN**	:	Generator
	GND	:	Ground
H	**H.P.F**	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	**IC**	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	**KIL**	:	Killer
L	**L**	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	**M**	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	**NC**	:	Non Connection
	NR	:	Noise Reduction
O	**OSC**	:	Oscillator
	OPE	:	Operation
P	**PB**	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	**R**	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	**S. CLK**	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play

KEY TO ABBREVIATIONS

S	**STB**	:	Serial Strobe
	SW	:	Switch
	SYNC	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter to the SERVICE MODE function, press and hold both buttons simultaneously on the main unit or on the main unit and on the remote control for more than a standard time (second).

Set Key	Set Key	Standard Time (seconds)	Operations
CH UP	FF	2	PLAY/REC total hours are displayed on the screen. Refer to the “PREVENTIVE CHECKS AND SERVICE INTERVALS” (CONFIRMATION OF HOURS USED). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the “WHEN REPLACING EEPROM (MEMORY) IC”.
CH UP	STOP	2	Adjust the PG SHIFTER automatically. Refer to the “ELECTRICAL ADJUSTMENT” (PG SHIFTER).
CH UP	PLAY	2	Initialization of the factory on VCR. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the clock setting, the channel setting, and PLAY/REC total hours.
CH DOWN	POWER	2	VCR operation mode at no connection of DVD. Refer to the “PREPARATION FOR SERVICING” NOTE: Although the DVD is connected, the DVD mode cannot be selected.

Set Key	Remocon Key	Standard Time (seconds)	Operations
REC	5	2	Initialization of the factory on DVD. NOTE: Do not use this for the normal servicing. The function will only work without the setting of DVD disc at DVD mode. While pressing the Remocon Key for more than the Standard Time, press the Set Key simultaneously.
REC	6	2	DVD Write mode. Refer to the “RE-WRITE FOR DVD FIRMWARE”. NOTE: Do not use this for the normal servicing. The function will only work at the DVD stop mode.
STOP	1	3	Check for the firmware version. Refer to the “RE-WRITE FOR DVD FIRMWARE”. NOTE: Do not use this for the normal servicing. The function will only work at the DVD stop mode.

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the “MECHANICAL ADJUSTMENT” (GUIDE ROLLER) and “ELECTRICAL ADJUSTMENT” (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape. Refer to the “PREPARATION FOR SERVICING”

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage.
Parts replacing time does not mean the life span for individual parts.
Also, long term storage or misuse may cause transformation and aging of rubber parts.
The following list means standard hours, so the checking hours depends on the conditions.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
T Brake Band		●	●	●	●	
Clutch Ass'y		●	●	●	●	
Idler Arm Ass'y		●	●	●	●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	●	●	●	●	Clean the Head

■ : Clean
● : Check it and if necessary, replace it.

CONFIRMATION OF HOURS USED

PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Connect the set to TV Monitor.
2. Turn on the POWER.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
   The **Fig. 1** screen will appear on TV Monitor.
4. After the confirmation of using hours, turn off the power.

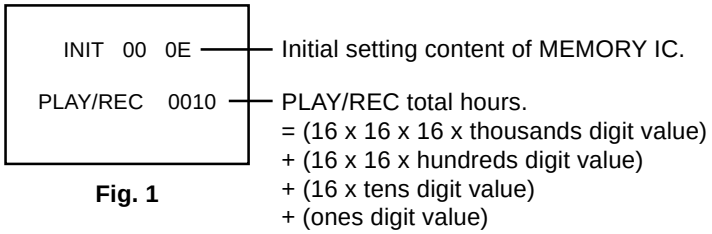

INIT 00 0E
Initial setting content of MEMORY IC.
PLAY/REC 0010
PLAY/REC total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

Fig. 1

PREVENTIVE CHECKS AND SERVICE INTERVALS

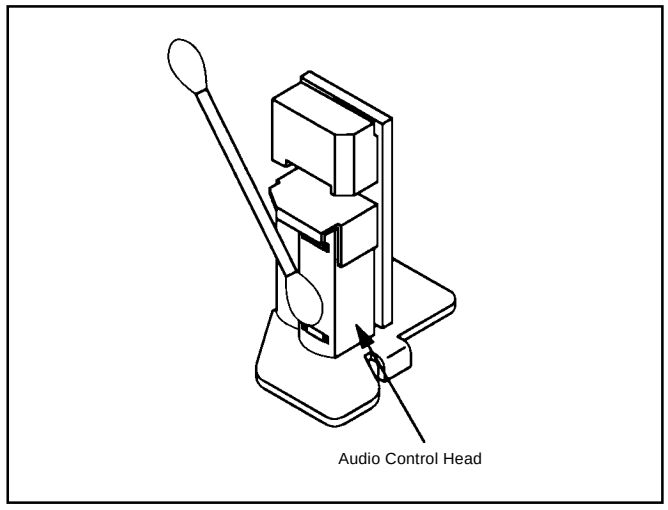
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

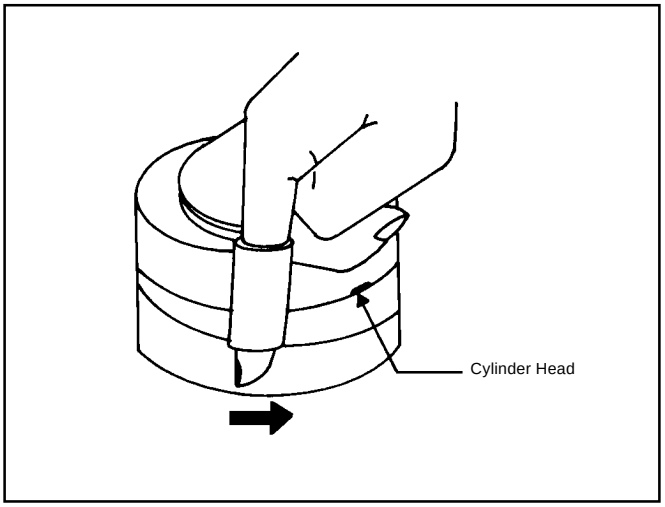
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



RE-WRITE FOR DVD FIRMWARE

1. Turn on the power, and set the DVD mode.

2. Open the DVD tray.

3. Press both Channel button **(6)** on the remote control and the REC button on the set for more than 2 seconds.

4. Press OPEN/CLOSE button on the unit to check if all the keys on the unit do not function.
   NOTE: To check if DVD Write mode is set.
   When inserting Up-Date Disc at Non DVD Write mode, the read error will happen.

5. Place the Up-Date Disc and close the tray by hand. **(Refer to SERVICING FIXTURE AND TOOLS)**

6. Automatic read will start and "ROM_WRITE_START" will be displayed on the screen.
   At this time, the horizontal noise lines may appear. But no problem.

7. Approxi. 60 seconds later, the tray will open automatically.

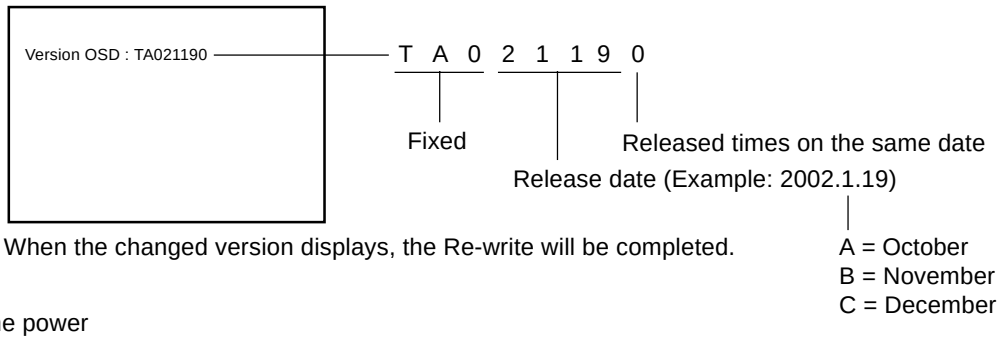
8. Remove the Up-Date Disc and close the tray by hand.

9. Unplug the AC cord, then plug it in.

10. **After the write, set to the initializing of shipping.**
    Set to the DVD mode, press both Channel button **(4)** on the remote control and the REC button on the set for more than 2 seconds.

11. The "INITIALIZE 1 ---> COMPLETE" will appear on the screen.
    Then unplug the AC cord, and plug it in.

12. **CHECK FOR THE FIRMWARE VERSION**
    Set to the DVD mode, press both Channel button **(1)** on the remote control and the STOP button on the set for more than 3 seconds.
    Firmware version will be displayed on the top left of the screen.


Version OSD : TA021190
T A 0 2 1 1 9 0
Fixed
Released times on the same date
Release date (Example: 2002.1.19)
A = October
B = November
C = December

When the changed version displays, the Re-write will be completed.

13. Turn off the power

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: INI 33 and INI 34 cannot be set. Because, the total time for the PLAY/REC of the main unit is recorded.

INIT	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	0E	C2	DA	10	64	64	4A	E6	0B	2B	86	2F	8A	08	0A	0F
10	AF	97	95	8A	B0	55	31	04	88	A5	9F	3A	00	10	BF	00
20	29	01	15	77	61	31	29	04	00	00	00	00	A2	B0	02	---

Table 1

1. Connect the set to TV Monitor.
2. Turn on the POWER.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
   ADDRESS and DATA will appear on TV Monitor as **Fig 1**.

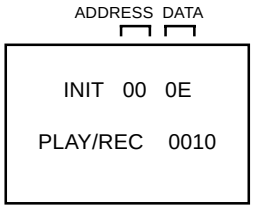
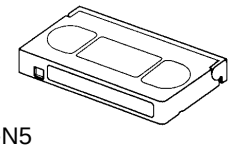
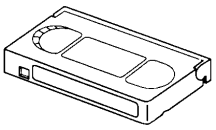
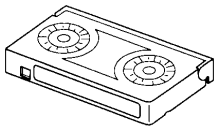
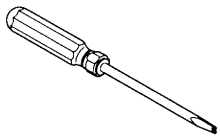
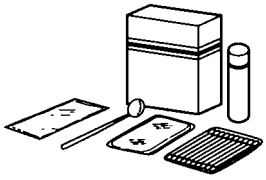
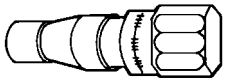
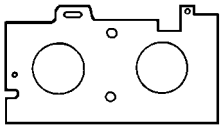
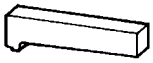
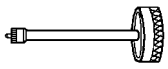
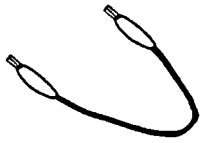
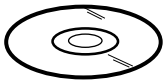
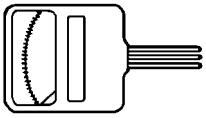


Fig. 1

4. ADDRESS is now selected and should “blink”. Using the SET + or - button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
5. Press ENTER to select DATA. When DATA is selected, it will “blink”.
6. Again, step through the DATA using SET + or - button until required DATA value has been selected.
7. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
8. Repeat steps 4 to 7 until all data has been checked.
9. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

Alignment Tape  ST-N5 ST-NF	Back tension cassette gauge  70909103	Torque cassette gauge (KT-300NR)  70909199	Taper nut driver  70909228
VTR cleaning kit 	VTR lubrication kit 	Grease 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 
JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG153 X Value Adjustment Screwdriver 	JG154 Cable 
JG176 Up-Date Disc 	Tentelometer 		

Ref. No.	Part No.	Parts Name	Remarks
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf•cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf•cm)	VSR Torque, Brake Torque (S Reel)
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND
JG176	APJG176009	Up-Date Disc	Up-Date of the Firmware

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Short circuit between **TP3001** and **Ground** with the cable JG154.
   (The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape.)
2. In case of using a cassette tape, press the EJECT button to insert or eject a cassette tape.
   Turn on the power and re-check the cable before checking the trouble points.

When you servicing without the connection of DVD, perform the following operations before step 1.

While pressing the POWER button on the set for more than 2 seconds, press the CH DOWN button on the set simultaneously at the Power OFF. Although the DVD is connected, the DVD mode cannot be selected.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig **(JG024A)** and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10(+2, -0)mm.
4. Adjust the other reel in the same way.

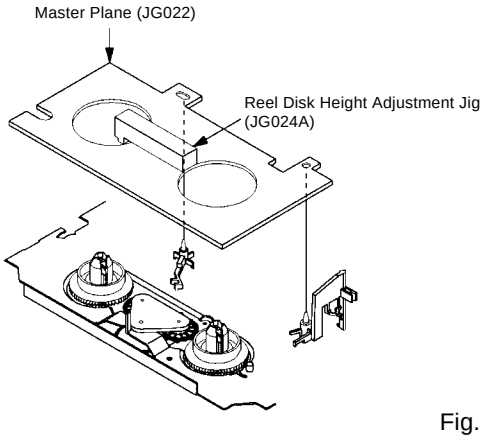


Fig. 1-1-A

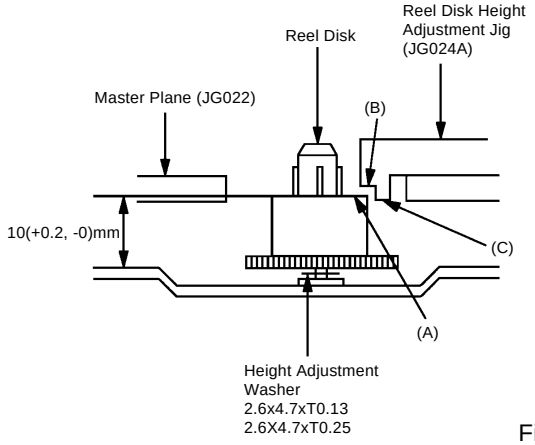


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

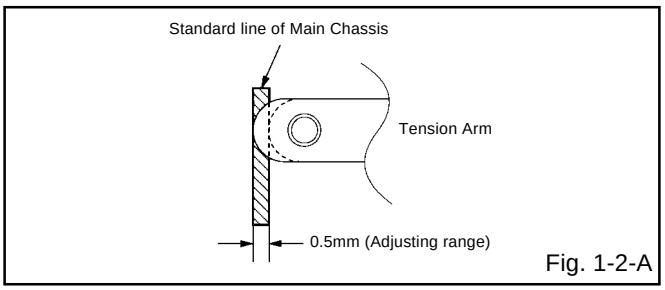


Fig. 1-2-A

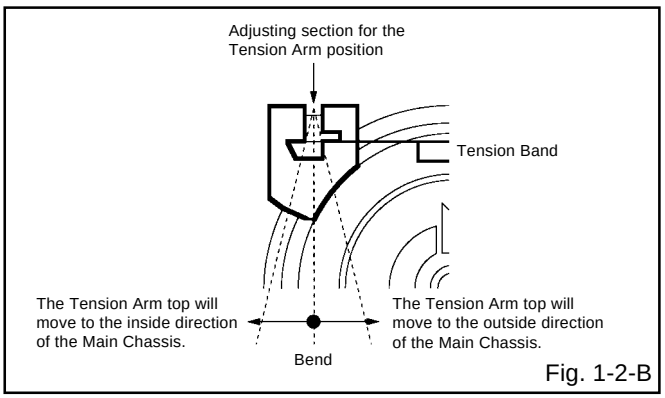


Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (T-120) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(KT-300NR)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(KT-300NR)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

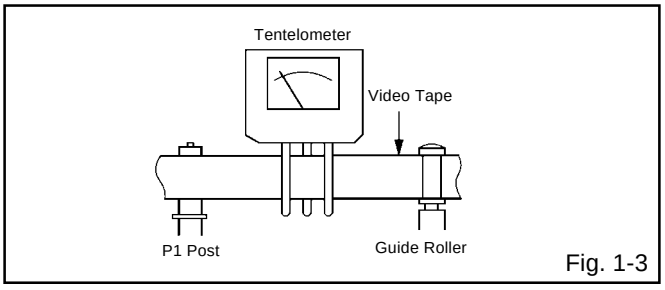


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Picture Search (Rewind) mode. **(Refer to Fig.1-4-B)**
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.

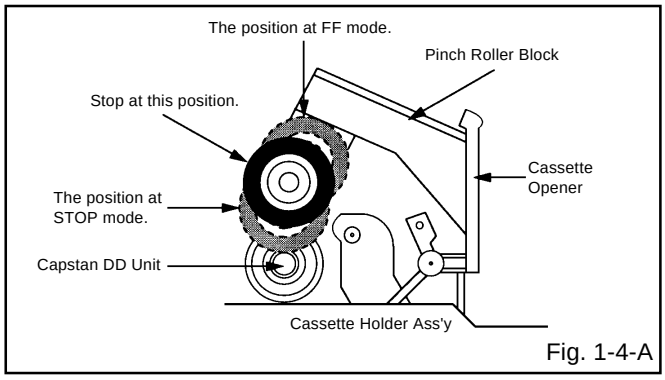


Fig. 1-4-A

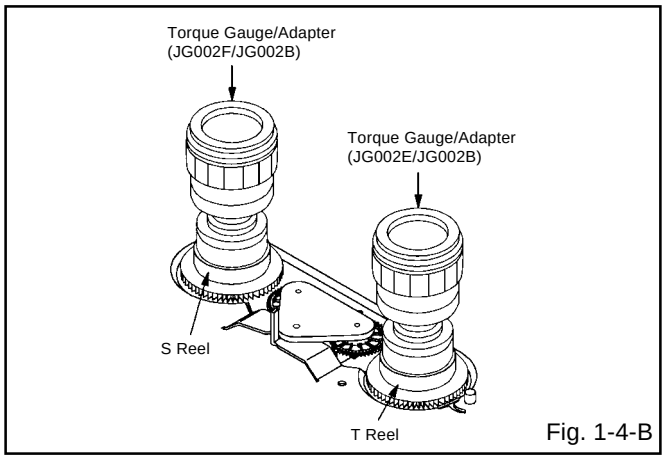


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band/Tension Connect/Tension Arm Ass'y T Reel side: T Reel/T Brake Band//T Brake Spring/T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
2. Connect CH-1 of the oscilloscope to **TP101 (Envelope)** and CH-2 to **TP3002 (SW Pulse)**.
3. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
4. When observing the envelope, adjust the Taper Nut Driver slightly until the envelope will be flat.
   Even if you press the Tracking Button, adjust so that flatness is not moved so much.
5. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
6. Adjust the PG shifter during playback.
   (Refer to the ELECTRICAL ADJUSTMENTS)

NOTE

After adjustment, confirm and adjust A/C head.
(Refer to item 2-2)

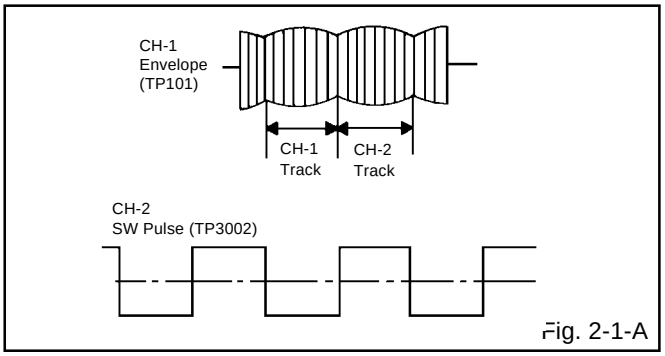


Fig. 2-1-A

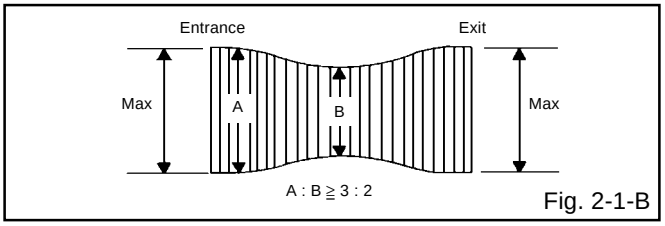


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Cap as shown in **Fig. 2-2-A**.
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

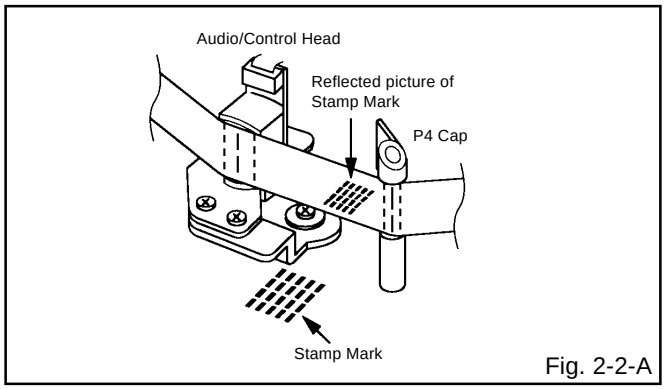


Fig. 2-2-A

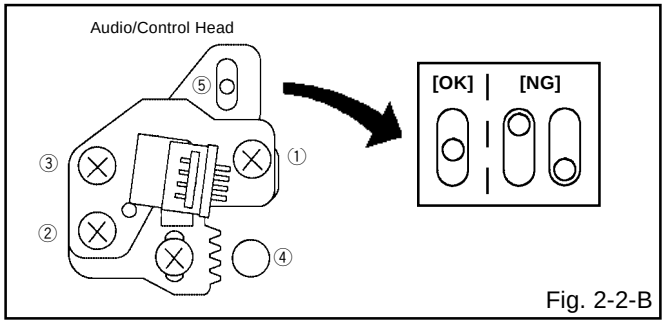


Fig. 2-2-B

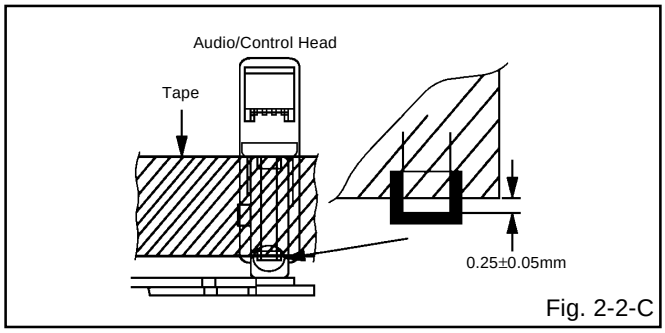


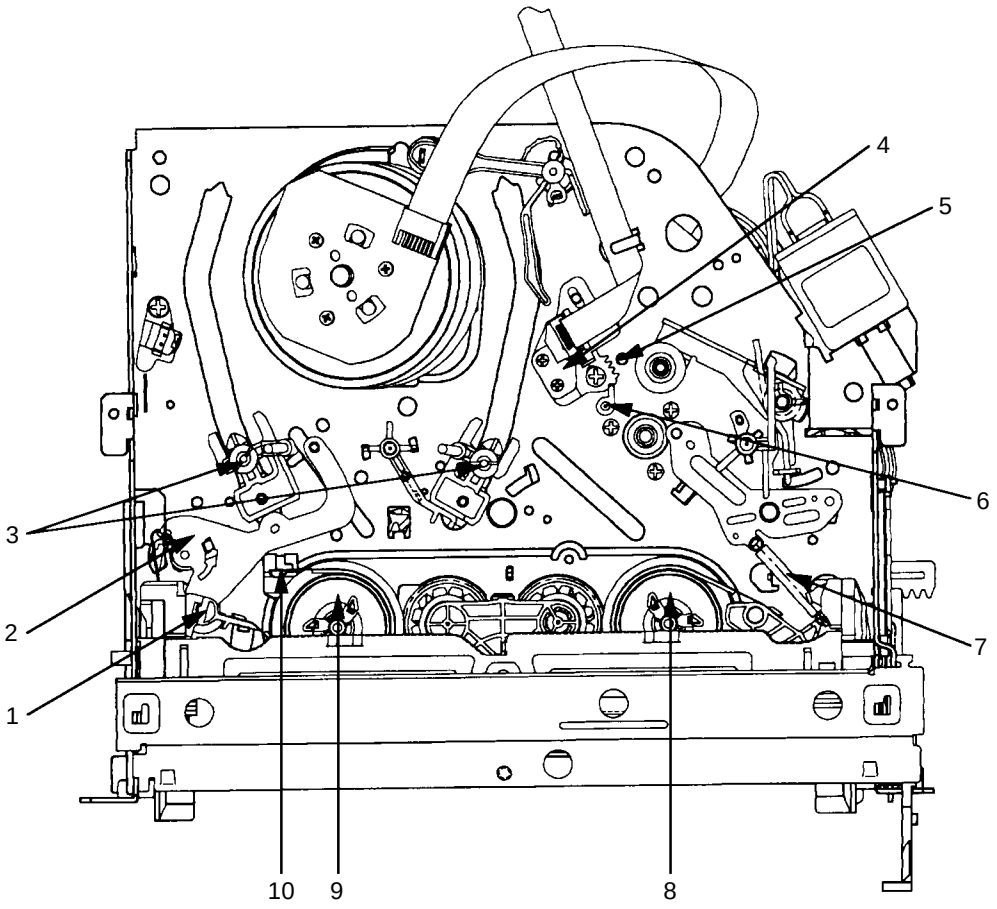
Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP3002** and CH-2 to **TP101**.
6. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
7. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Then, check if the ⑤ section of **Fig. 2-2-B** is on the center position (or rather to the cylinder side). In case of the envelope maximum at the difference position from the center, adjust the matching of picture and sound again.

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Connect
2. Tension Arm
3. Guide Roller
4. Audio/Control Head
5. X value adjustment driver hole
6. P4 Post
7. T Brake Spring
8. T Reel
9. S Reel
10. Adjusting section for the Tension Arm position

ELECTRICAL ADJUSTMENTS

Read and perform this adjustment when repairing the circuits or replacing electrical parts or PCB assemblies.

1. BASIC ADJUSTMENT

CAUTION

When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

1-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK
Input Signal-Alignment Tape

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP3002** and CH-2 to **TP8001**.
2. Playback the alignment tape.
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press both CH UP button on the set and the STOP button on the set for more than 2 seconds.

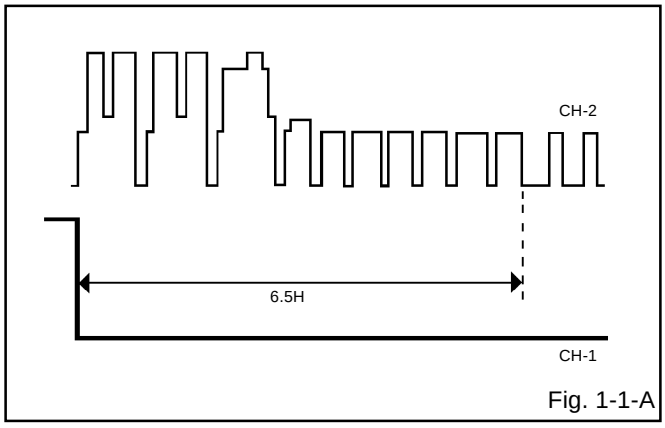


Fig. 1-1-A

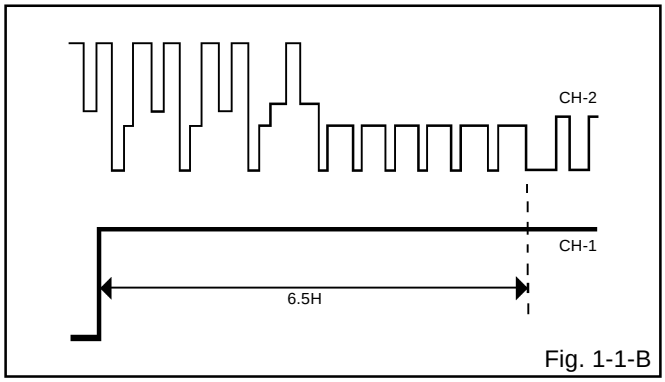
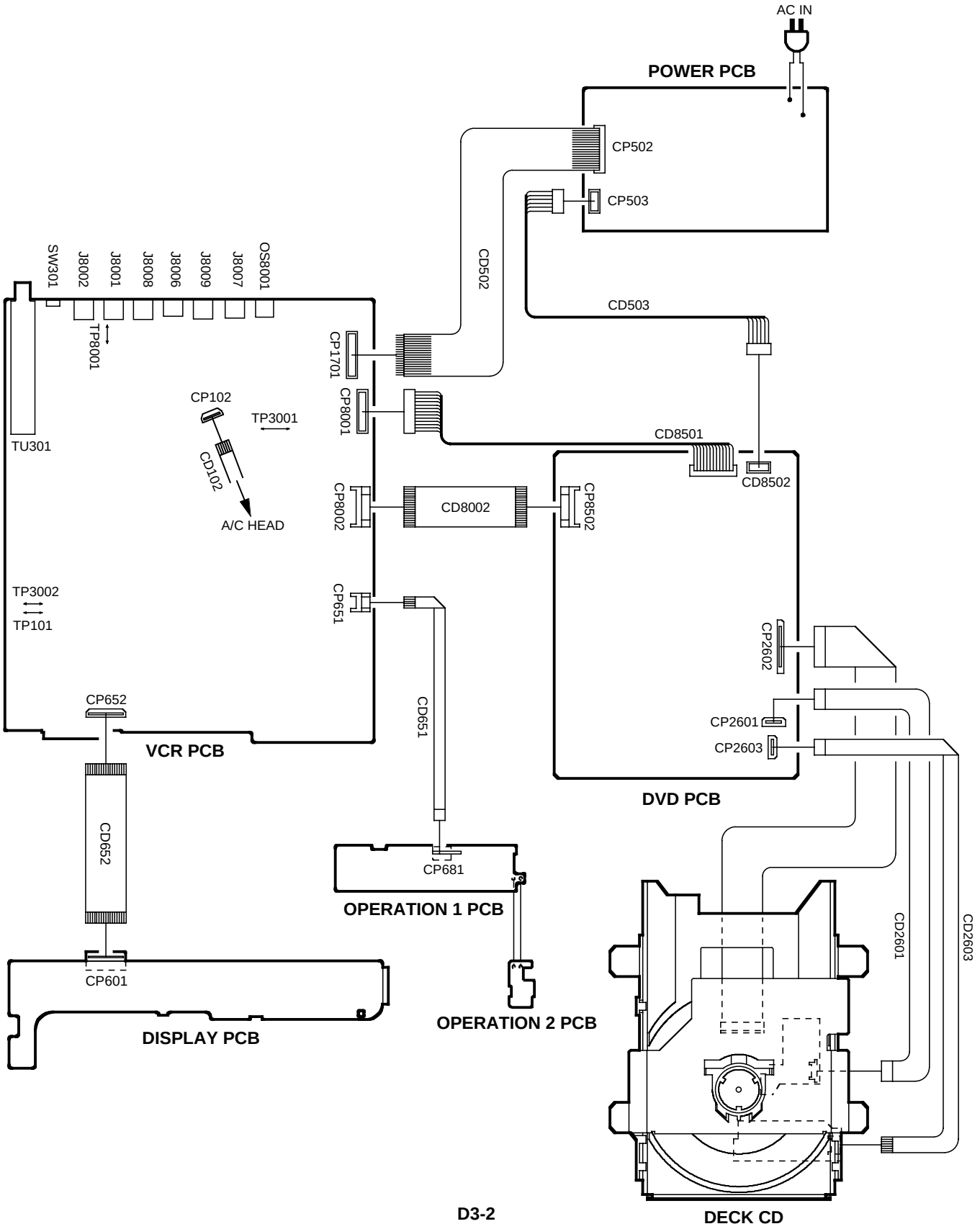


Fig. 1-1-B

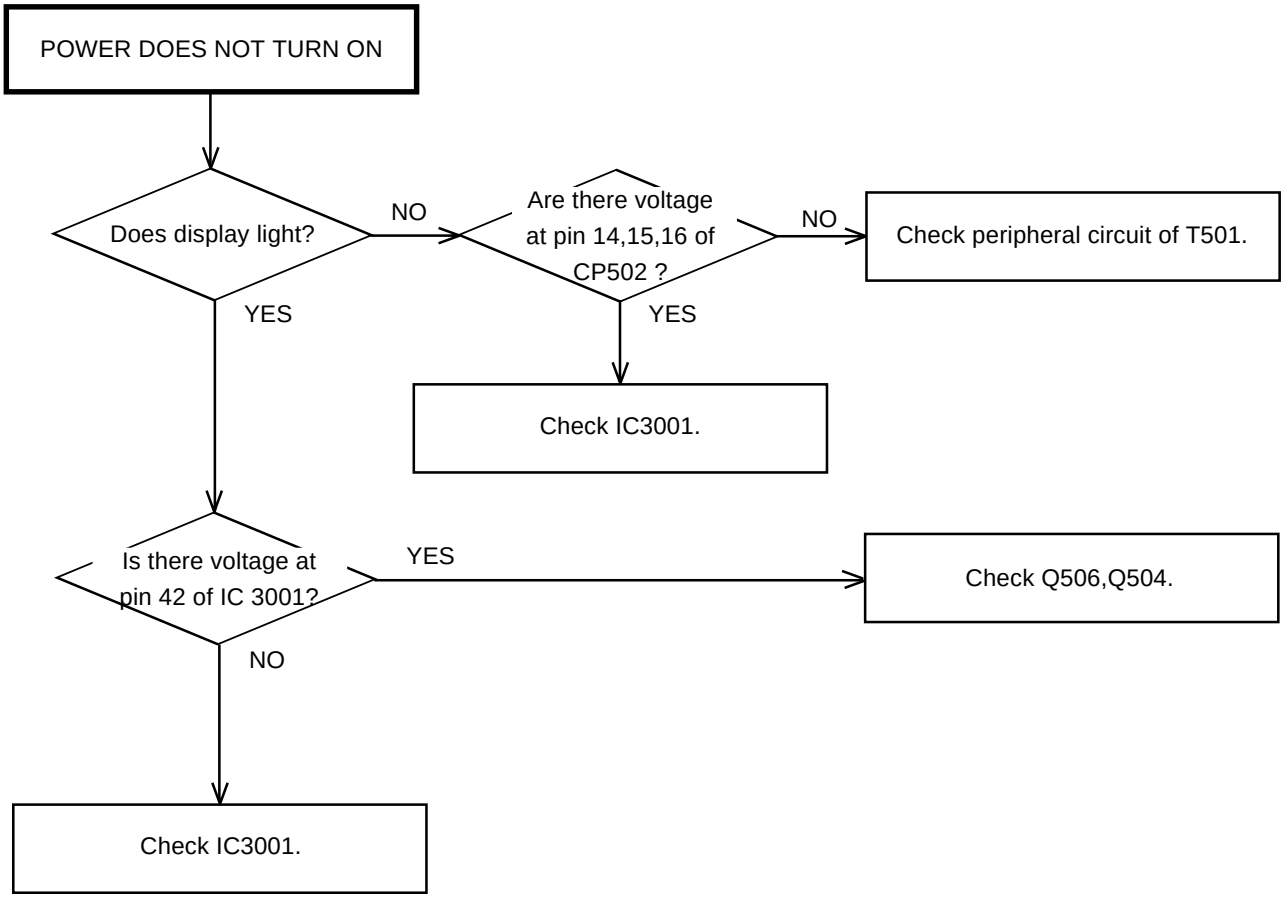
ELECTRICAL ADJUSTMENTS

2. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)

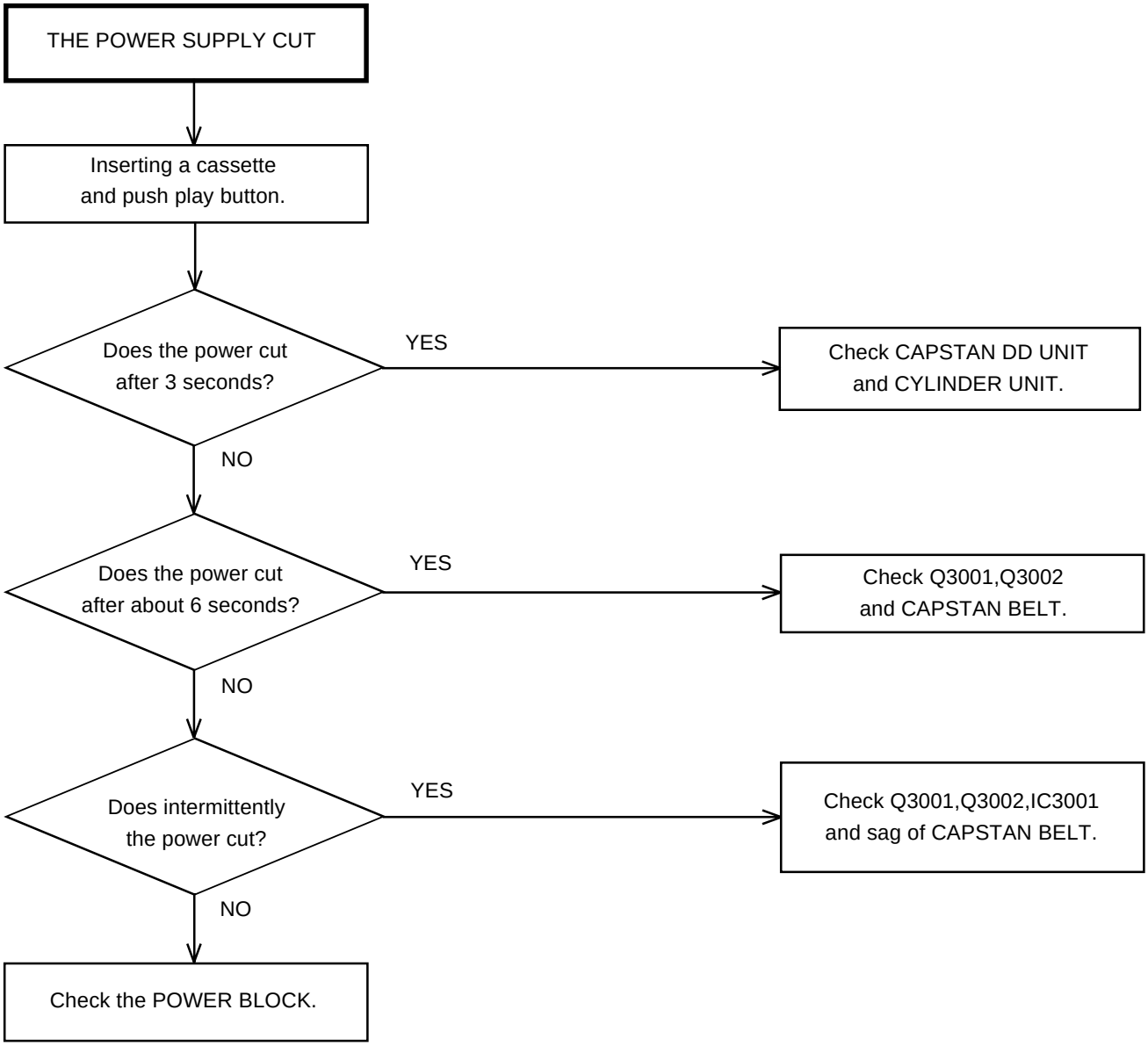


TROUBLESHOOTING GUIDE

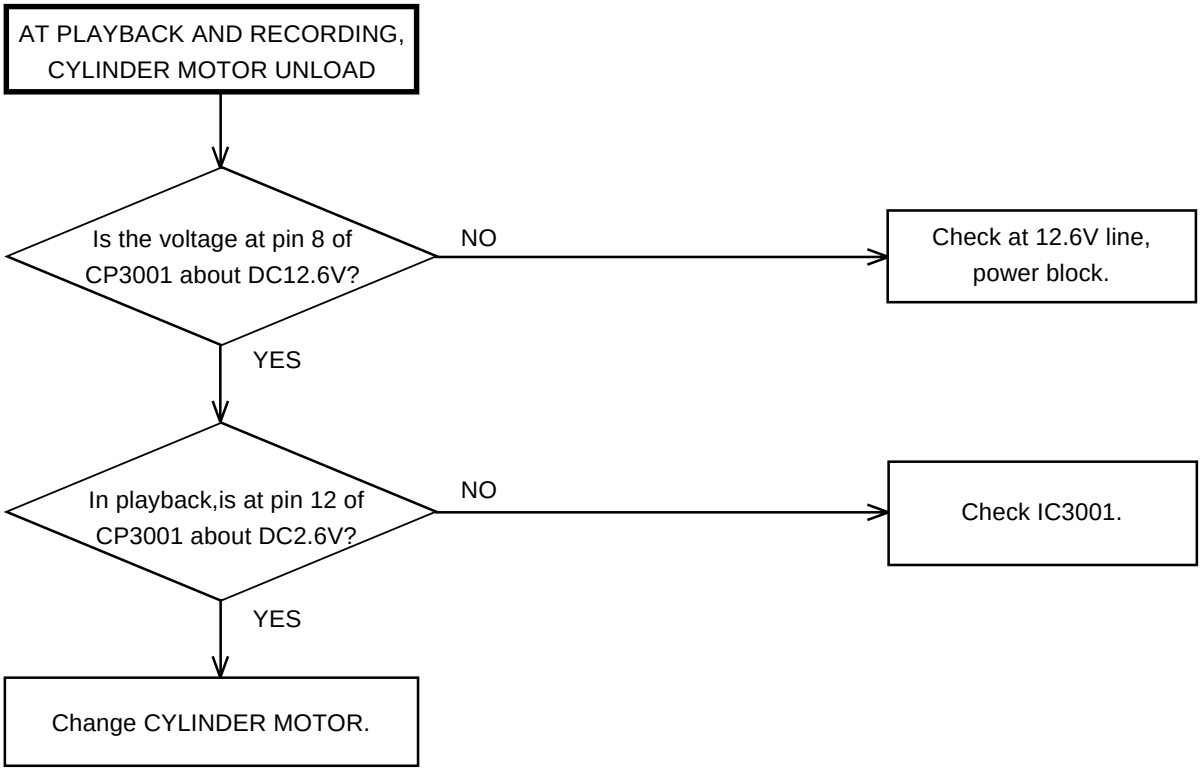
(VCR SECTION)



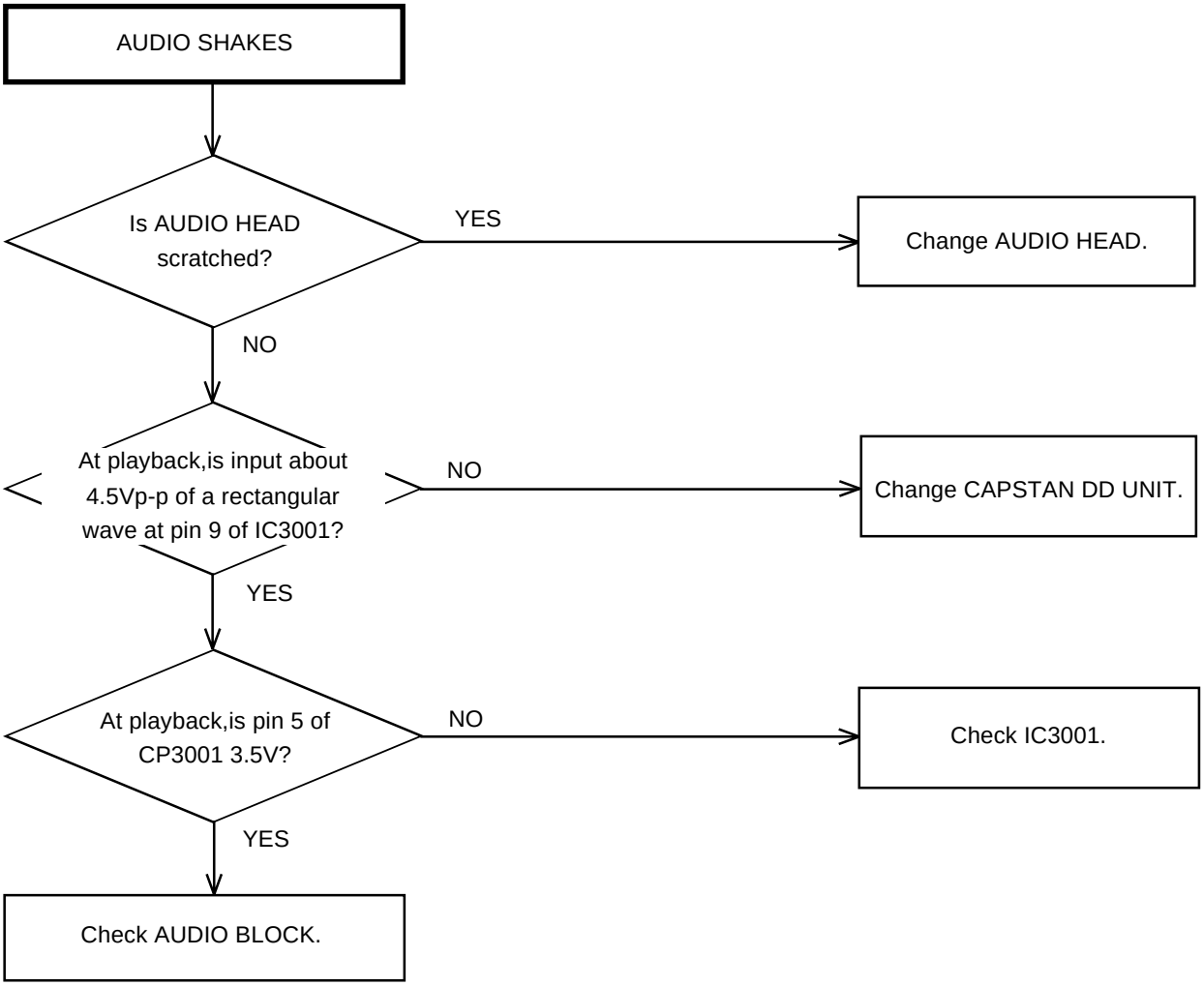
TROUBLESHOOTING GUIDE



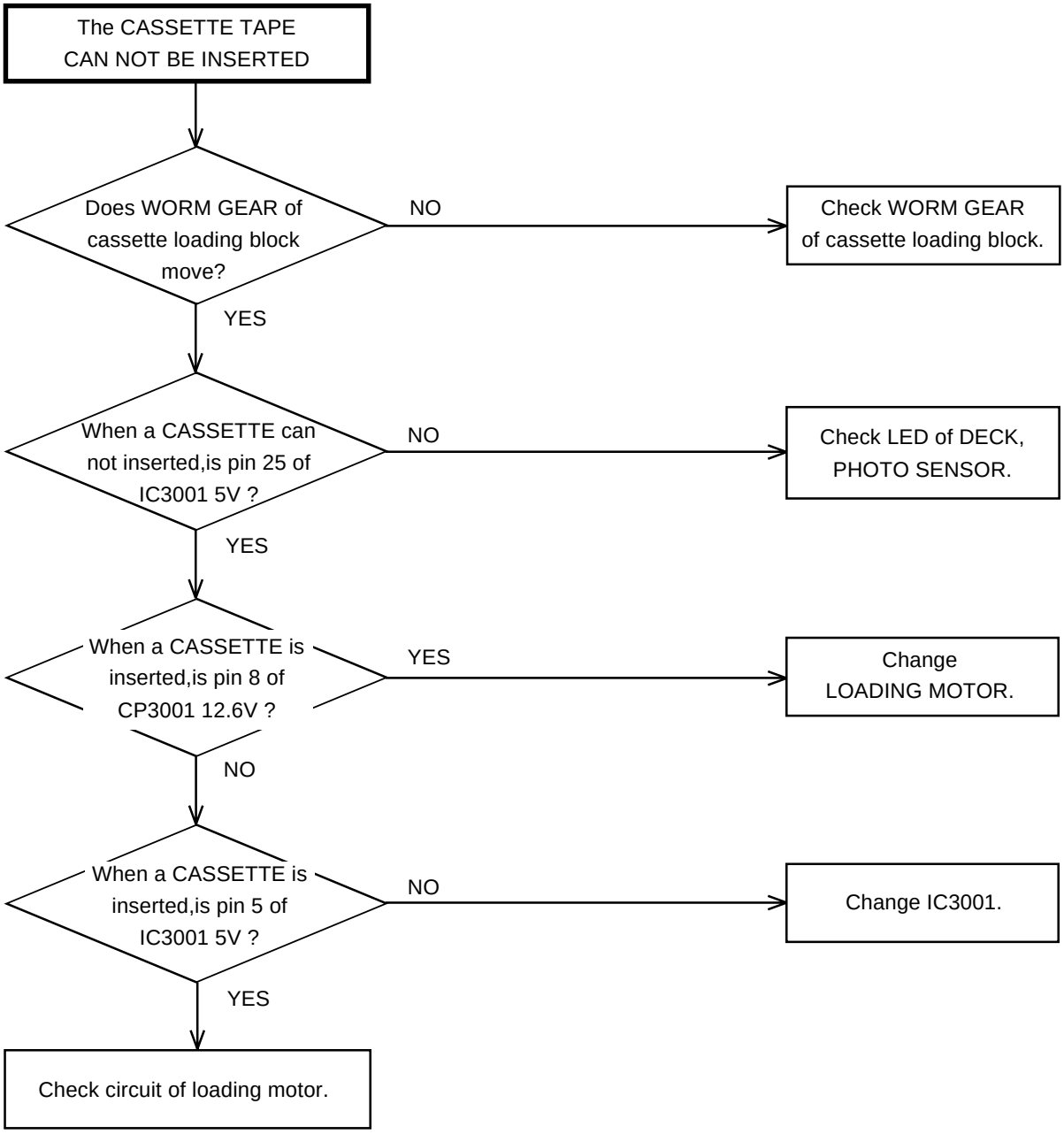
TROUBLESHOOTING GUIDE


AT PLAYBACK AND RECORDING, CYLINDER MOTOR UNLOAD
Is the voltage at pin 8 of CP3001 about DC12.6V?
NO
Check at 12.6V line, power block.
YES
In playback,is at pin 12 of CP3001 about DC2.6V?
NO
Check IC3001.
YES
Change CYLINDER MOTOR.

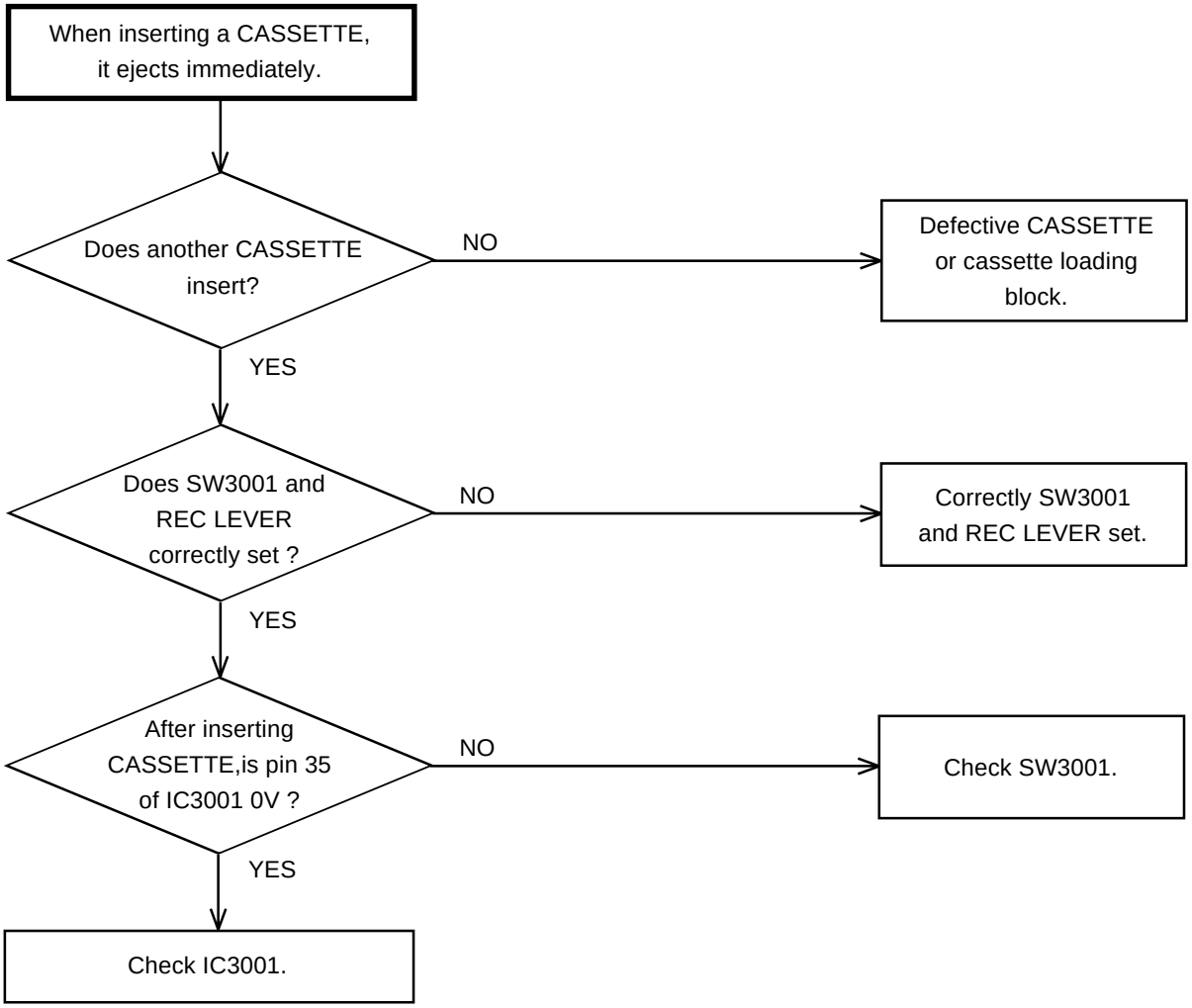
TROUBLESHOOTING GUIDE



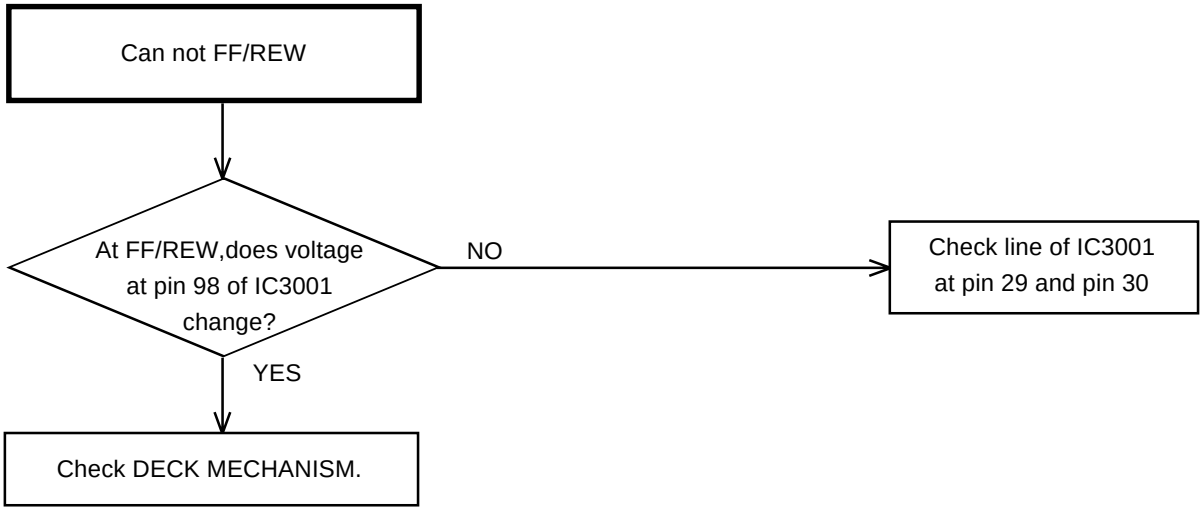
TROUBLESHOOTING GUIDE


The CASSETTE TAPE CAN NOT BE INSERTED
Does WORM GEAR of cassette loading block move?
NO
Check WORM GEAR of cassette loading block.
YES
When a CASSETTE can not inserted,is pin 25 of IC3001 5V ?
NO
Check LED of DECK, PHOTO SENSOR.
YES
When a CASSETTE is inserted,is pin 8 of CP3001 12.6V ?
YES
Change LOADING MOTOR.
NO
When a CASSETTE is inserted,is pin 5 of IC3001 5V ?
NO
Change IC3001.
YES
Check circuit of loading motor.

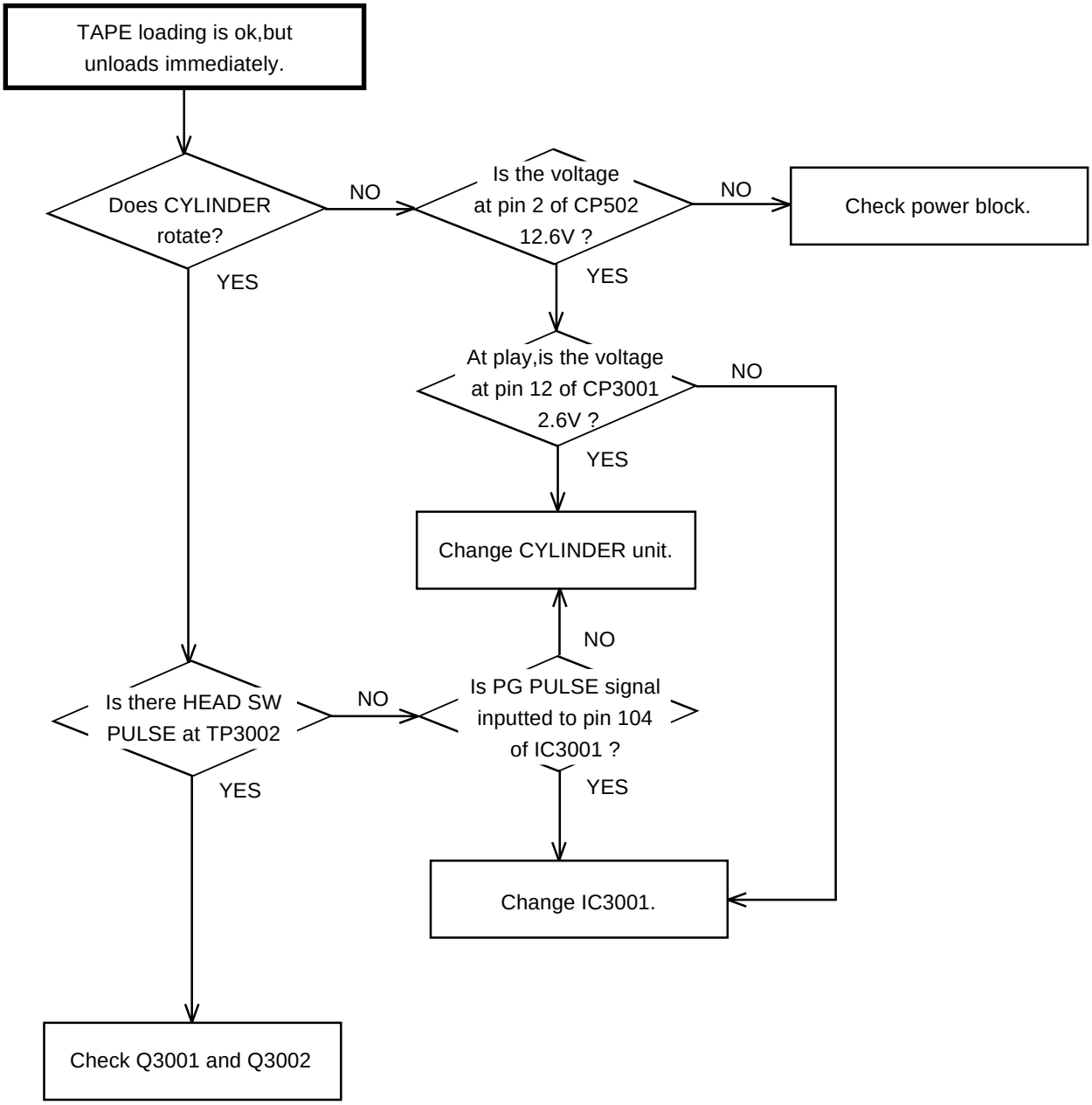
TROUBLESHOOTING GUIDE



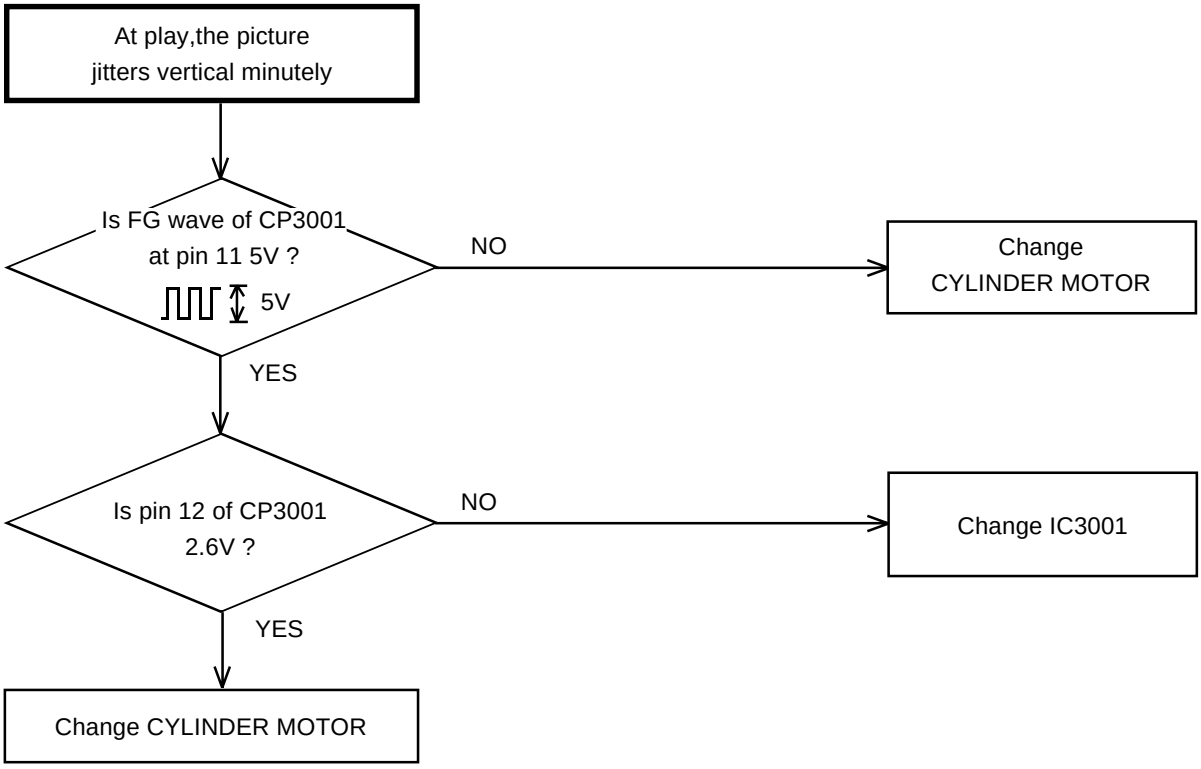
TROUBLESHOOTING GUIDE


Can not FF/REW
At FF/REW,does voltage at pin 98 of IC3001 change?
NO
Check line of IC3001 at pin 29 and pin 30
YES
Check DECK MECHANISM.

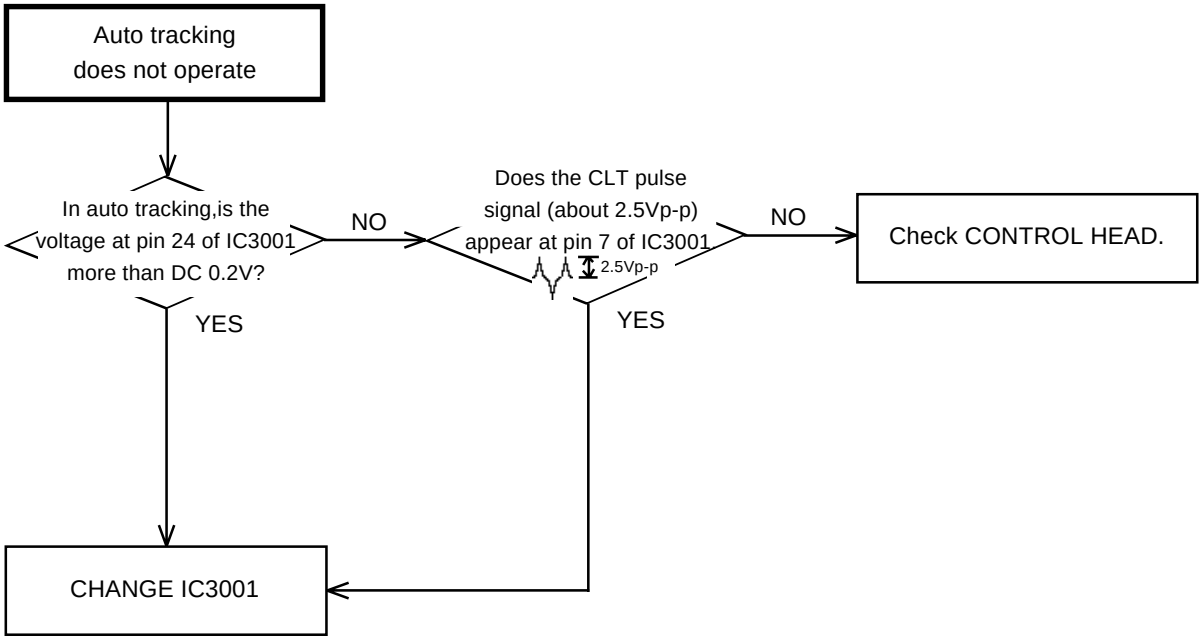
TROUBLESHOOTING GUIDE



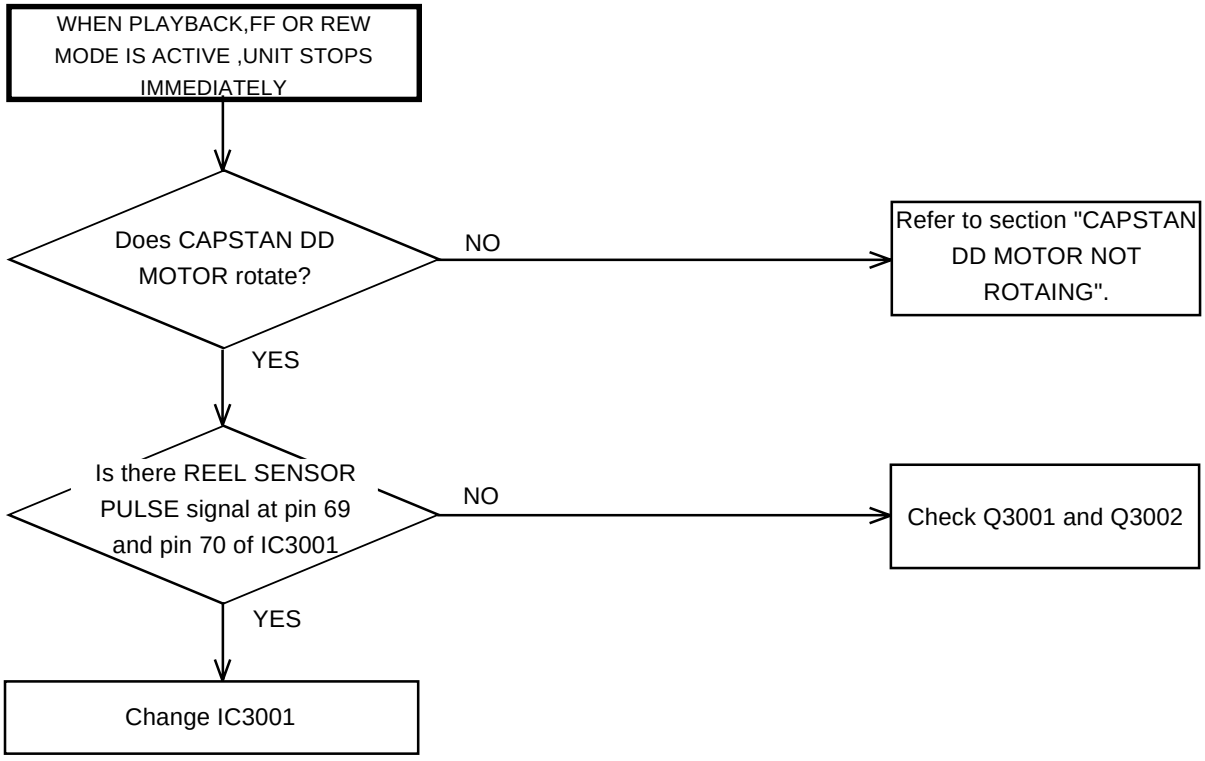
TROUBLESHOOTING GUIDE



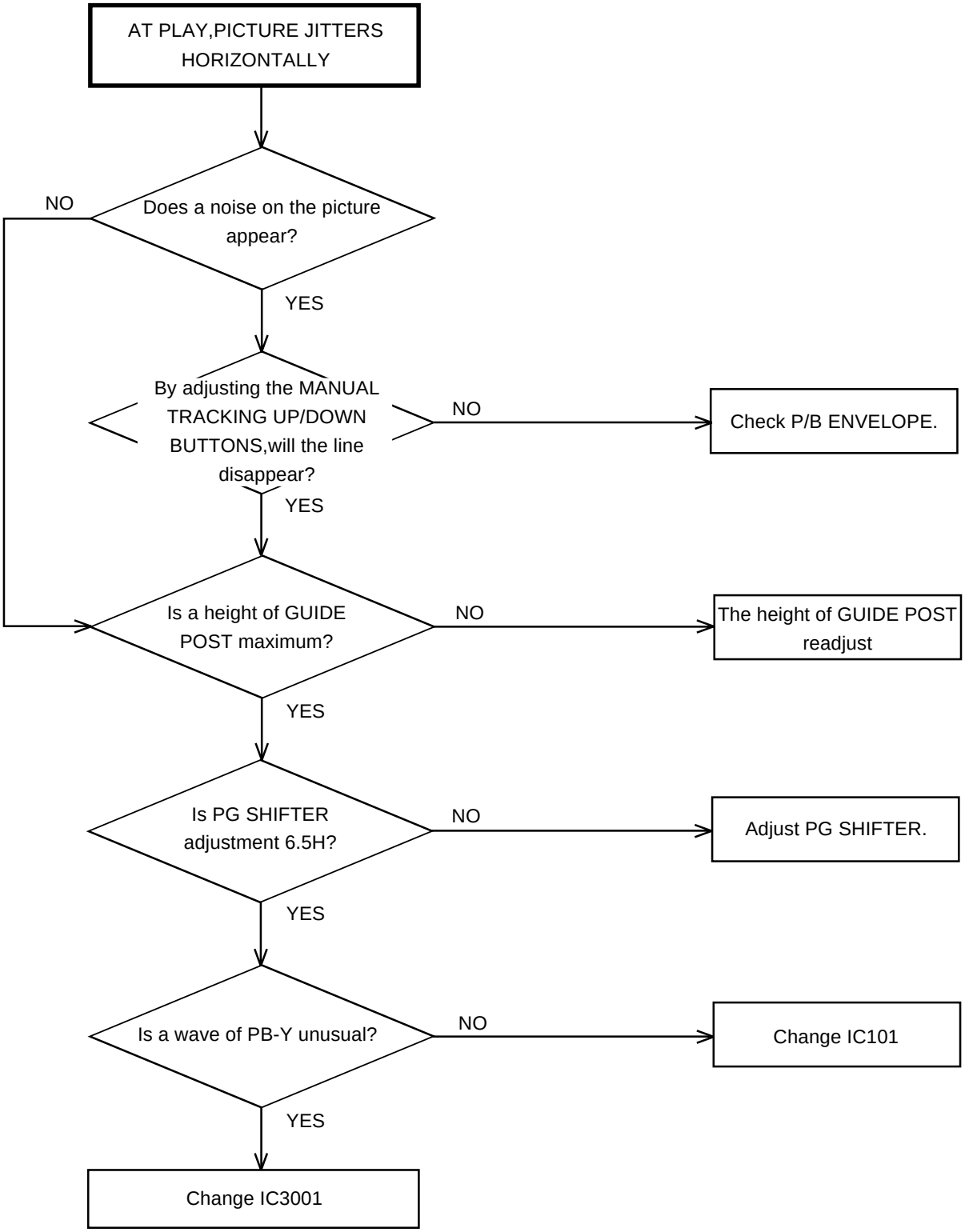
TROUBLESHOOTING GUIDE



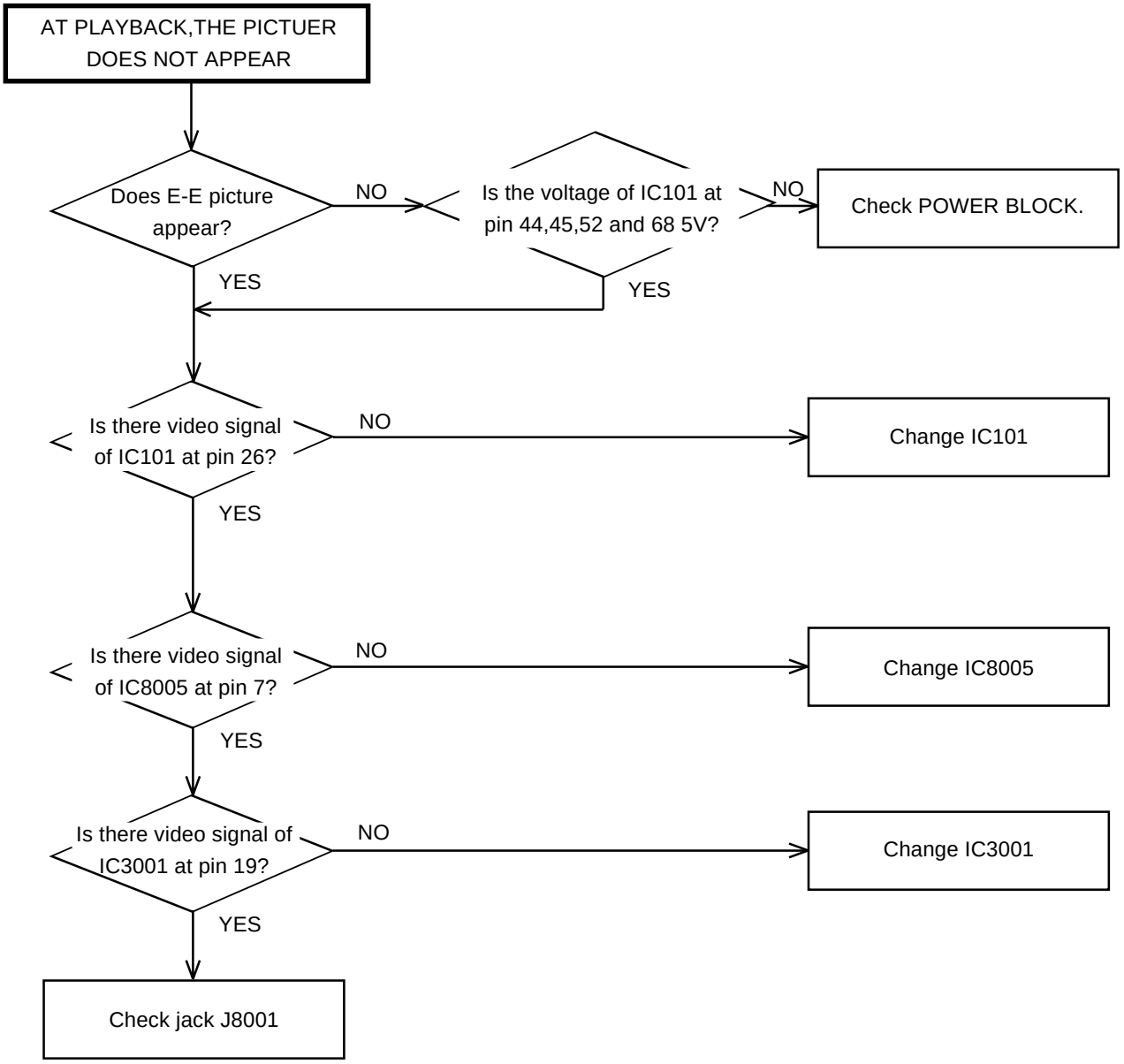
TROUBLESHOOTING GUIDE


WHEN PLAYBACK,FF OR REW MODE IS ACTIVE ,UNIT STOPS IMMEDIATELY
Does CAPSTAN DD MOTOR rotate?
NO
Refer to section "CAPSTAN DD MOTOR NOT ROTAING".
YES
Is there REEL SENSOR PULSE signal at pin 69 and pin 70 of IC3001
NO
Check Q3001 and Q3002
YES
Change IC3001

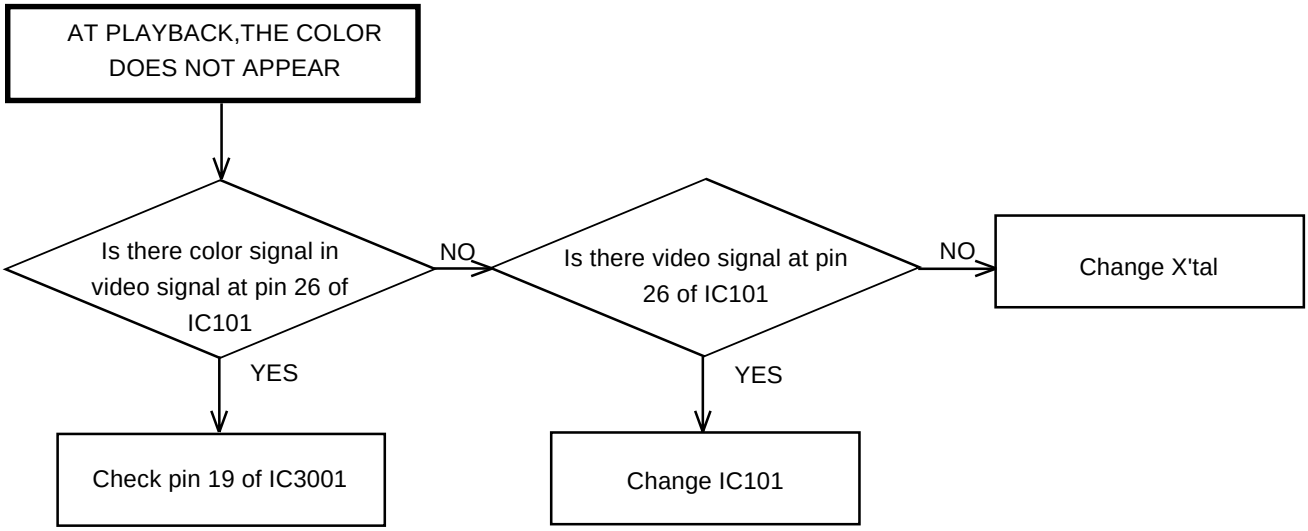
TROUBLESHOOTING GUIDE



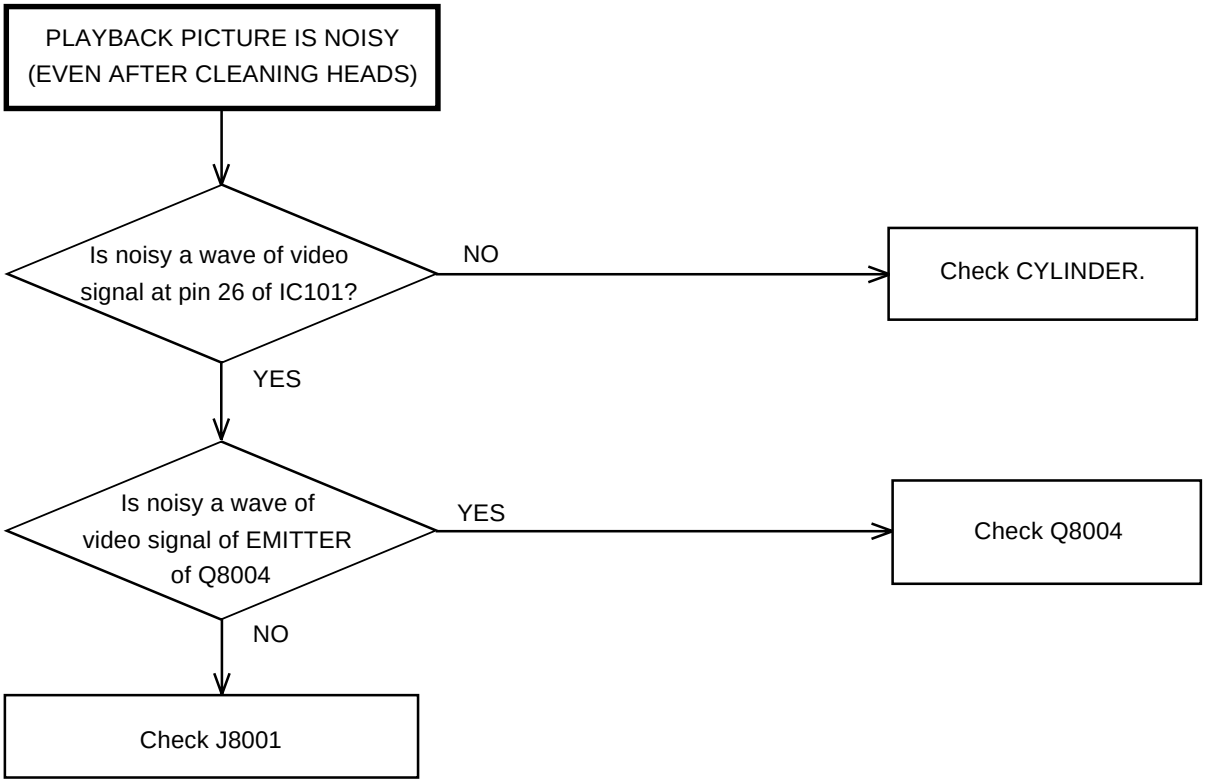
TROUBLESHOOTING GUIDE



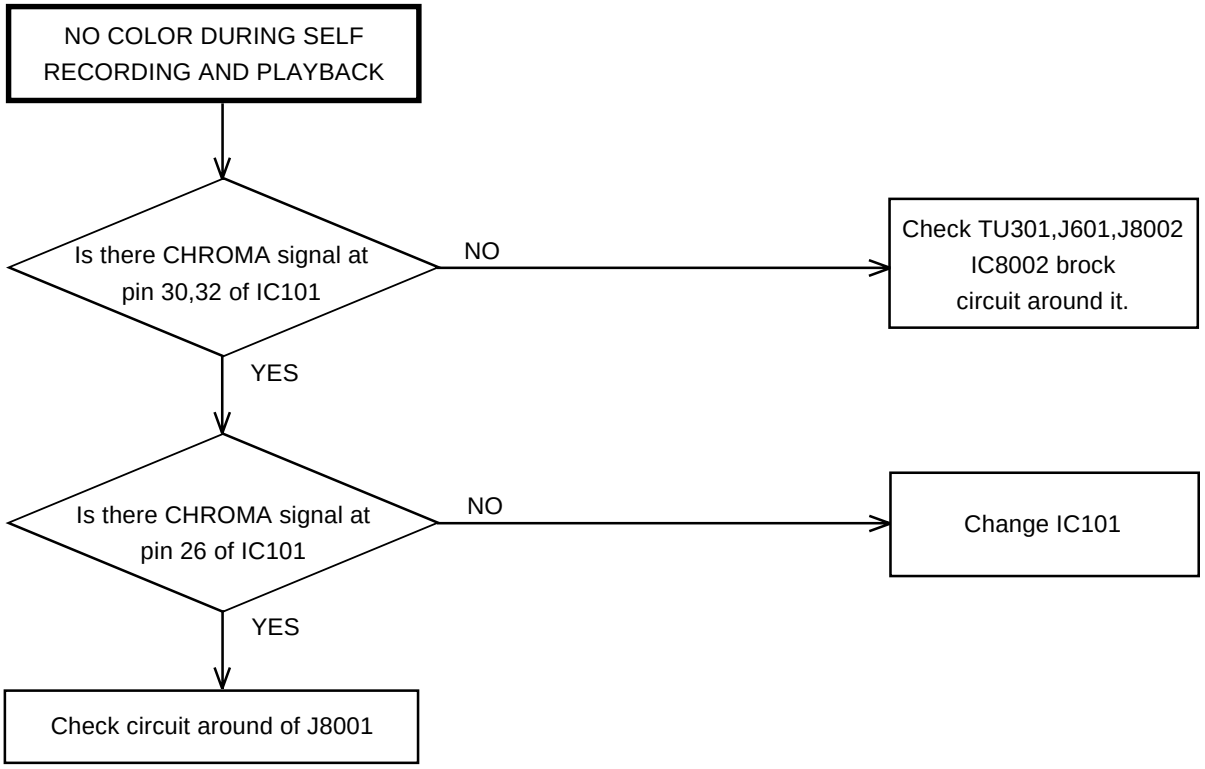
TROUBLESHOOTING GUIDE


AT PLAYBACK,THE COLOR DOES NOT APPEAR
Is there color signal in video signal at pin 26 of IC101
NO
Is there video signal at pin 26 of IC101
NO
Change X'tal
YES
YES
Check pin 19 of IC3001
Change IC101

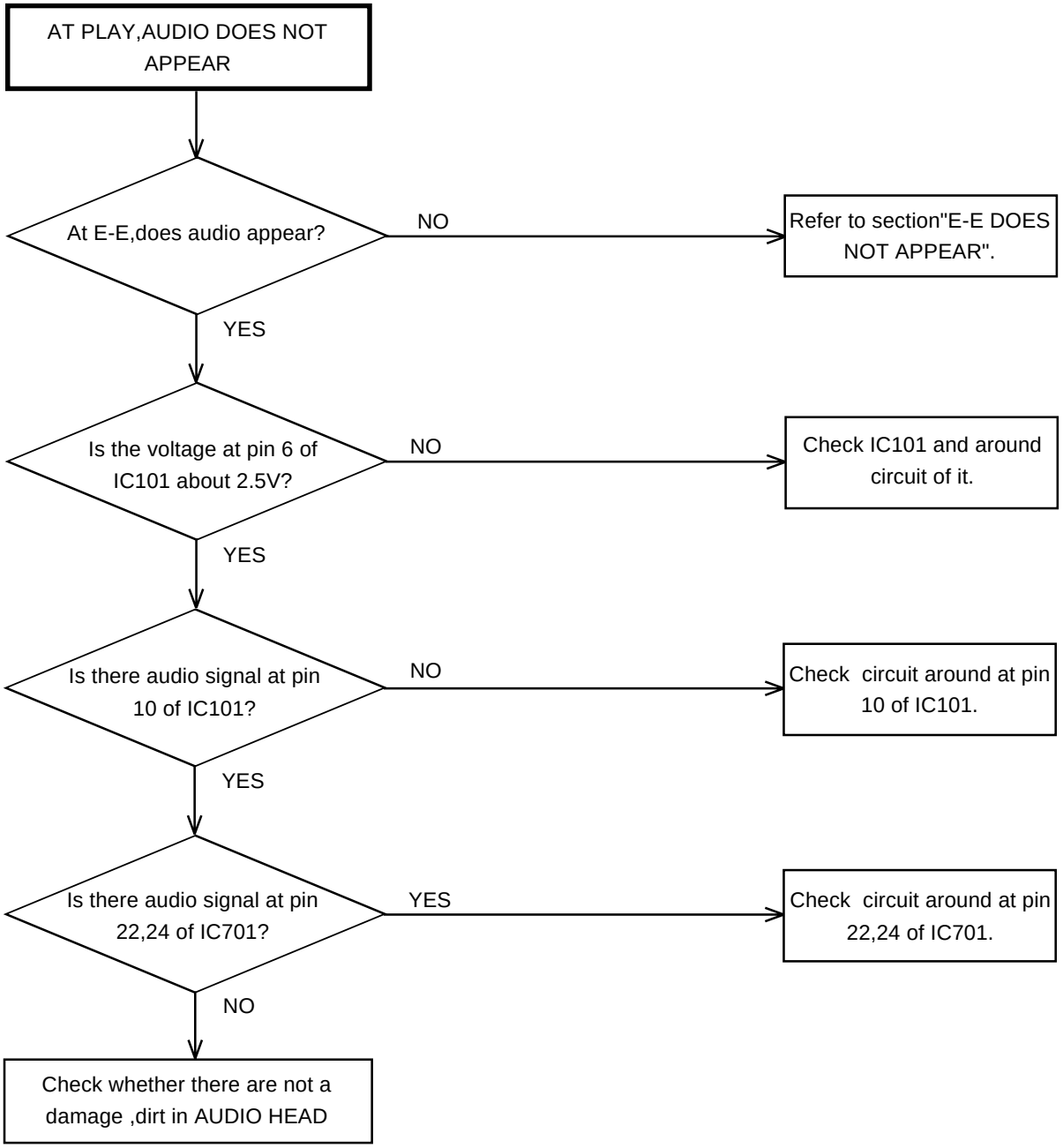
TROUBLESHOOTING GUIDE



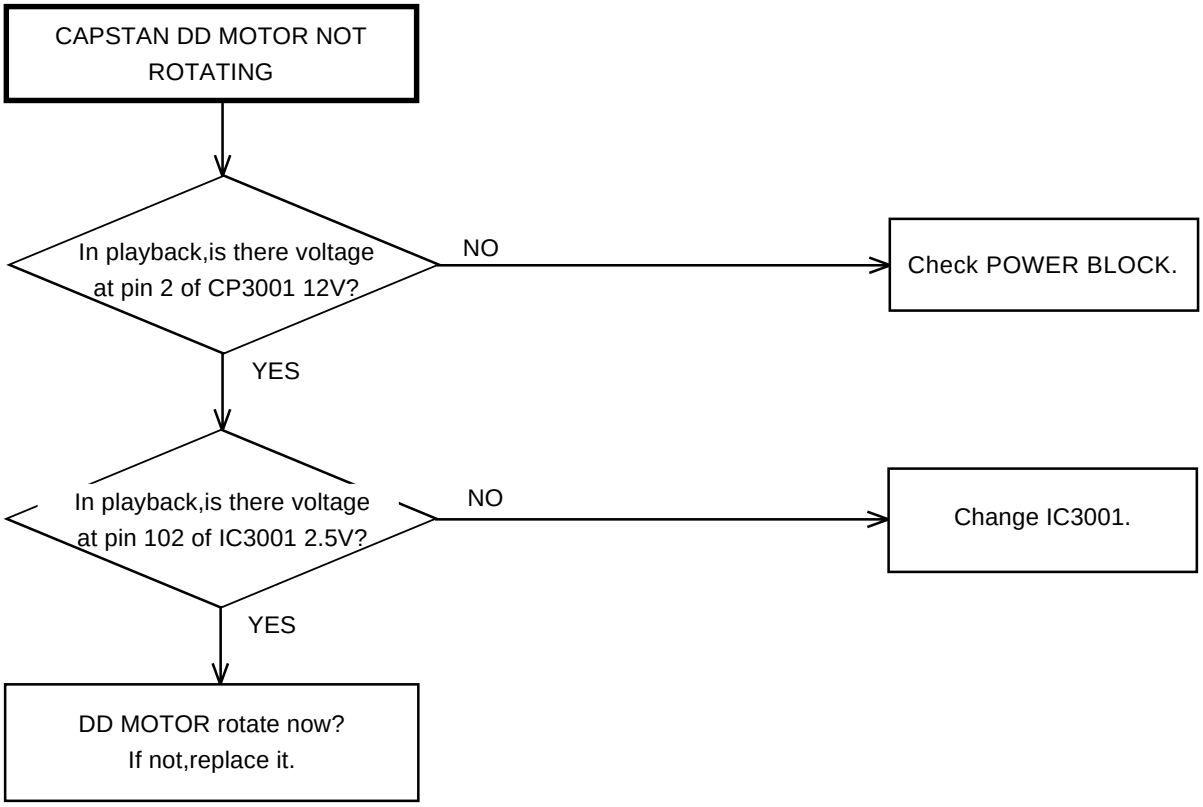
TROUBLESHOOTING GUIDE


NO COLOR DURING SELF RECORDING AND PLAYBACK
Is there CHROMA signal at pin 30,32 of IC101
NO
Check TU301,J601,J8002 IC8002 brock circuit around it.
YES
Is there CHROMA signal at pin 26 of IC101
NO
Change IC101
YES
Check circuit around of J8001

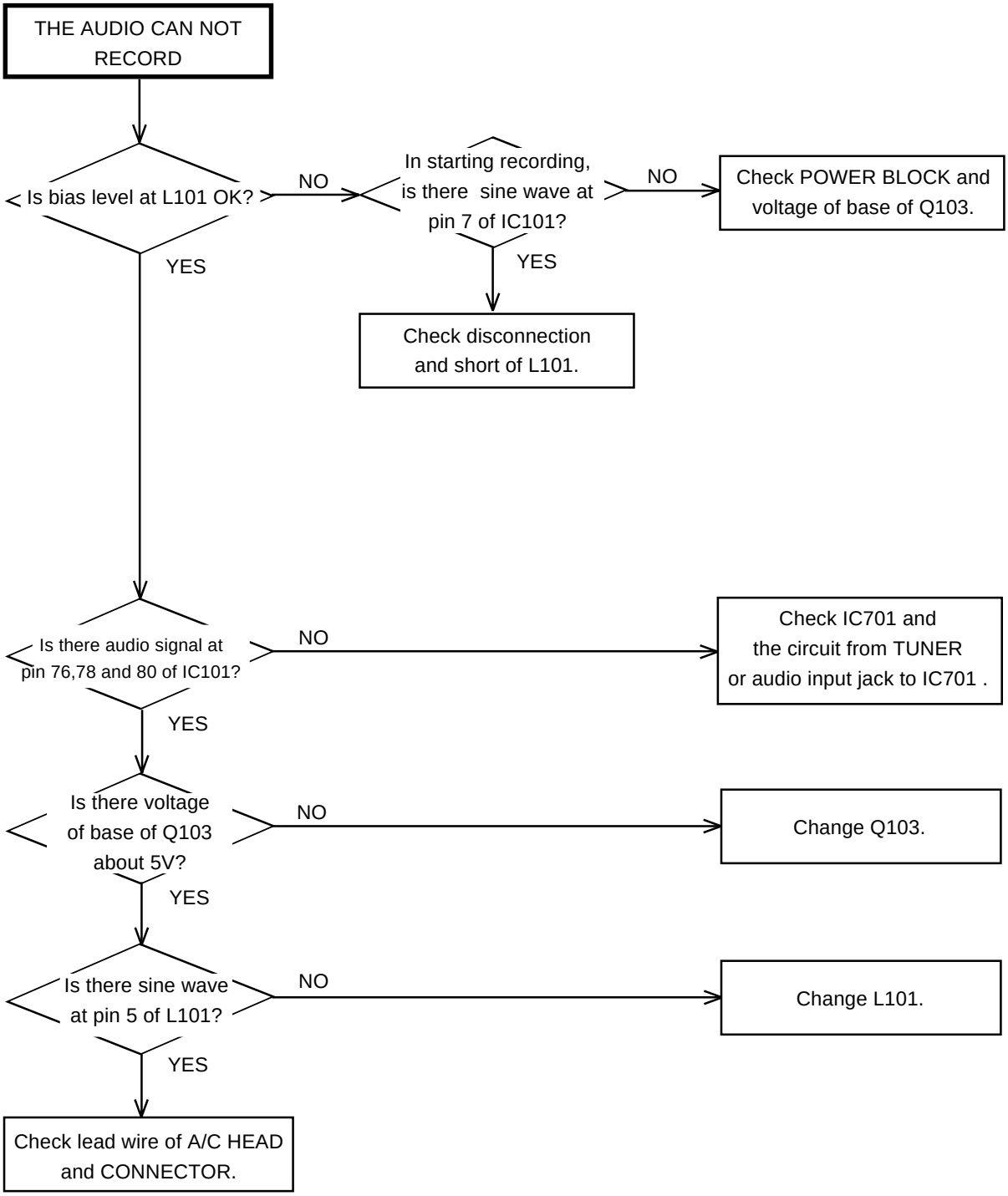
TROUBLESHOOTING GUIDE


AT PLAY,AUDIO DOES NOT APPEAR
At E-E,does audio appear?
NO
Refer to section"E-E DOES NOT APPEAR".
YES
Is the voltage at pin 6 of IC101 about 2.5V?
NO
Check IC101 and around circuit of it.
YES
Is there audio signal at pin 10 of IC101?
NO
Check circuit around at pin 10 of IC101.
YES
Is there audio signal at pin 22,24 of IC701?
YES
Check circuit around at pin 22,24 of IC701.
NO
Check whether there are not a damage ,dirt in AUDIO HEAD

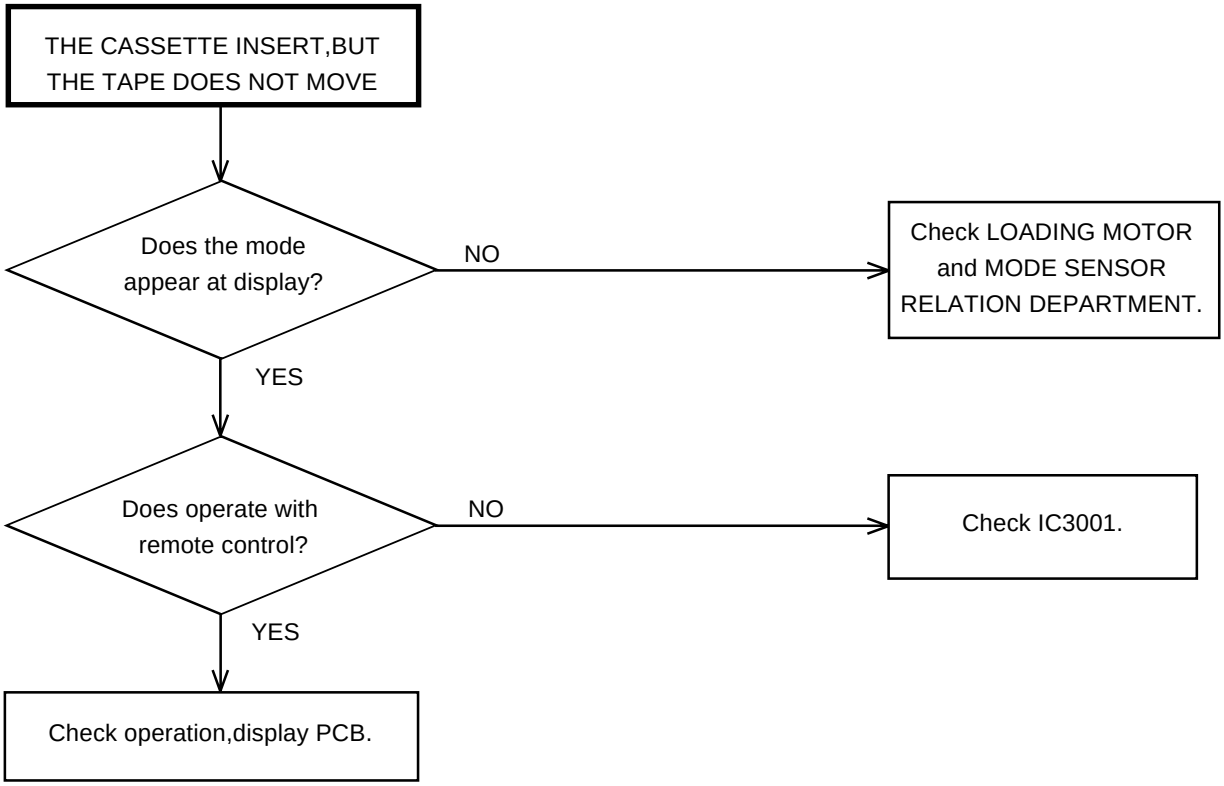
TROUBLESHOOTING GUIDE


CAPSTAN DD MOTOR NOT ROTATING
In playback,is there voltage at pin 2 of CP3001 12V?
NO
Check POWER BLOCK.
YES
In playback,is there voltage at pin 102 of IC3001 2.5V?
NO
Change IC3001.
YES
DD MOTOR rotate now? If not,replace it.

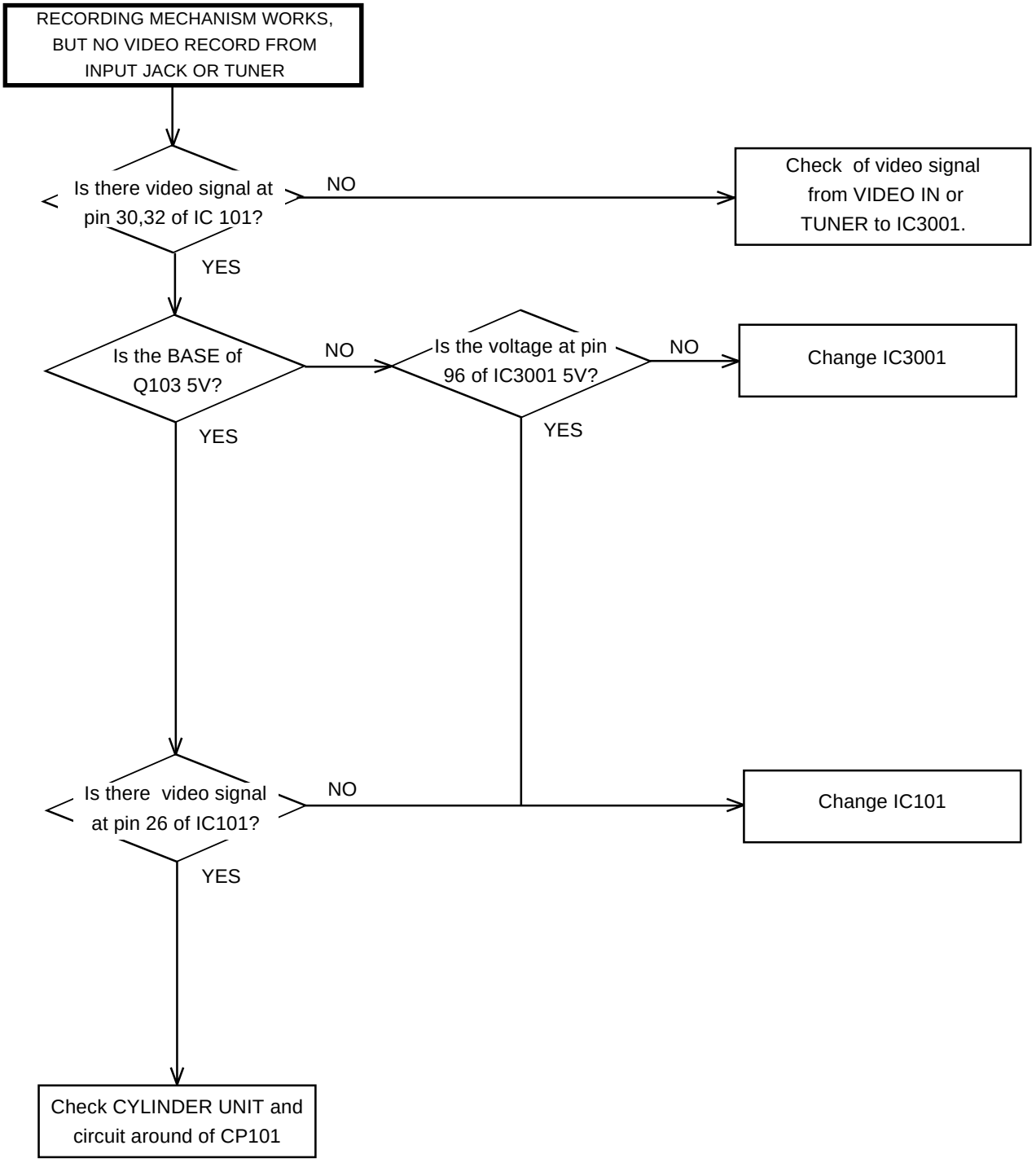
TROUBLESHOOTING GUIDE


THE AUDIO CAN NOT RECORD
Is bias level at L101 OK?
NO
In starting recording, is there sine wave at pin 7 of IC101?
NO
Check POWER BLOCK and voltage of base of Q103.
YES
YES
Check disconnection and short of L101.
Is there audio signal at pin 76,78 and 80 of IC101?
NO
Check IC701 and the circuit from TUNER or audio input jack to IC701 .
YES
Is there voltage of base of Q103 about 5V?
NO
Change Q103.
YES
Is there sine wave at pin 5 of L101?
NO
Change L101.
YES
Check lead wire of A/C HEAD and CONNECTOR.

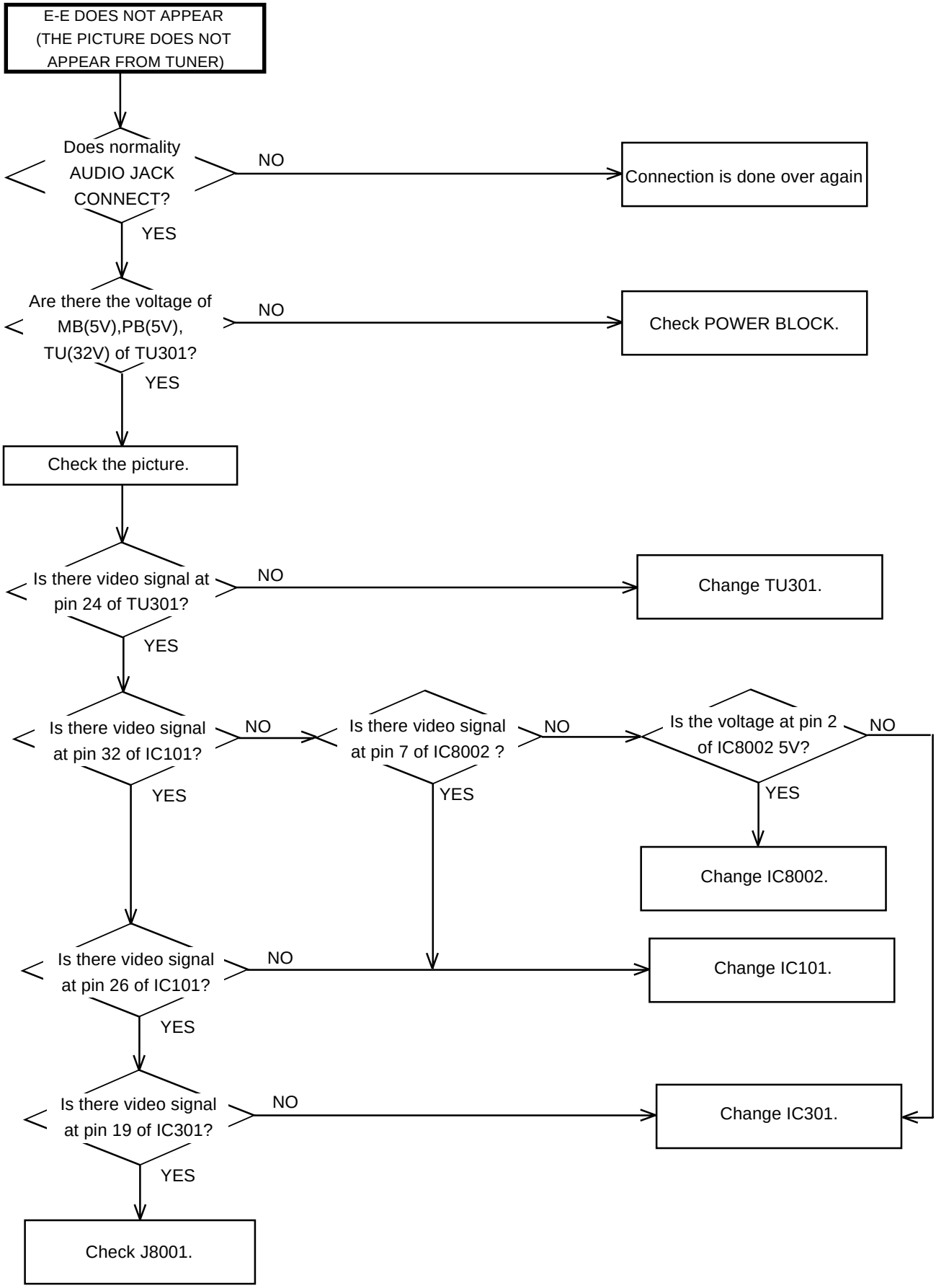
TROUBLESHOOTING GUIDE



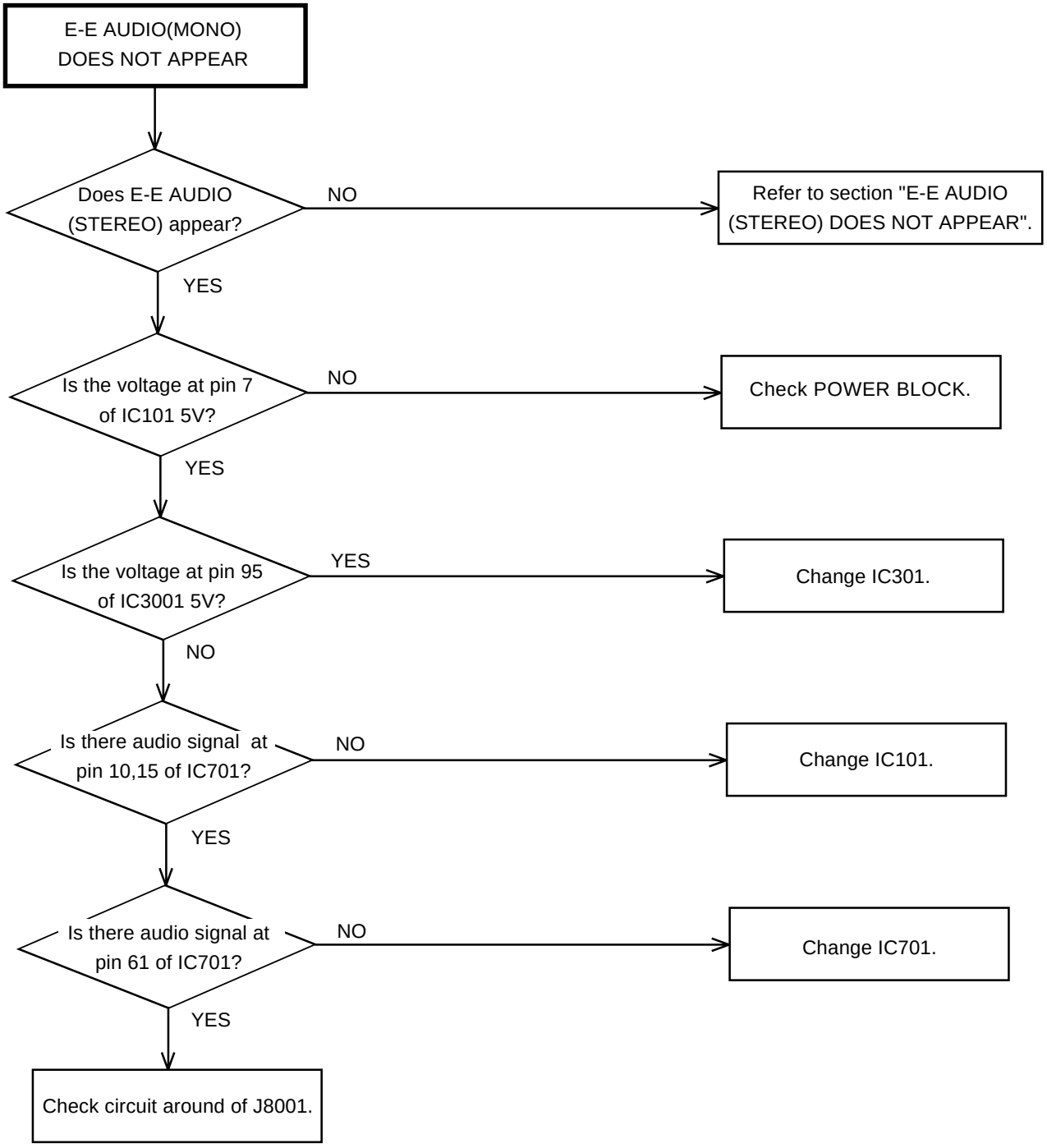
TROUBLESHOOTING GUIDE


RECORDING MECHANISM WORKS, BUT NO VIDEO RECORD FROM INPUT JACK OR TUNER
Is there video signal at pin 30,32 of IC 101?
NO
Check of video signal from VIDEO IN or TUNER to IC3001.
YES
Is the BASE of Q103 5V?
NO
Is the voltage at pin 96 of IC3001 5V?
NO
Change IC3001
YES
YES
Is there video signal at pin 26 of IC101?
NO
Change IC101
YES
Check CYLINDER UNIT and circuit around of CP101

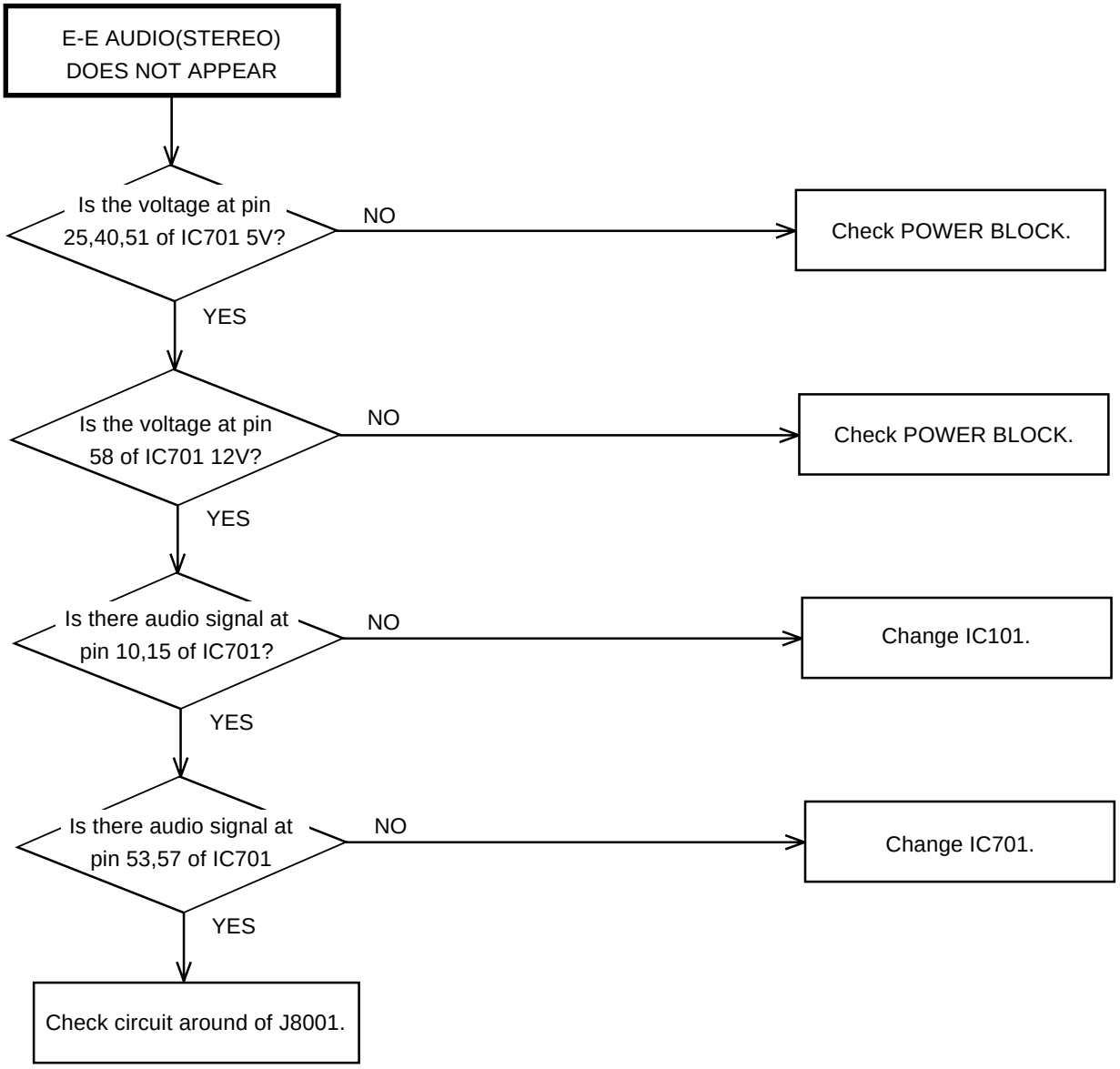
TROUBLESHOOTING GUIDE



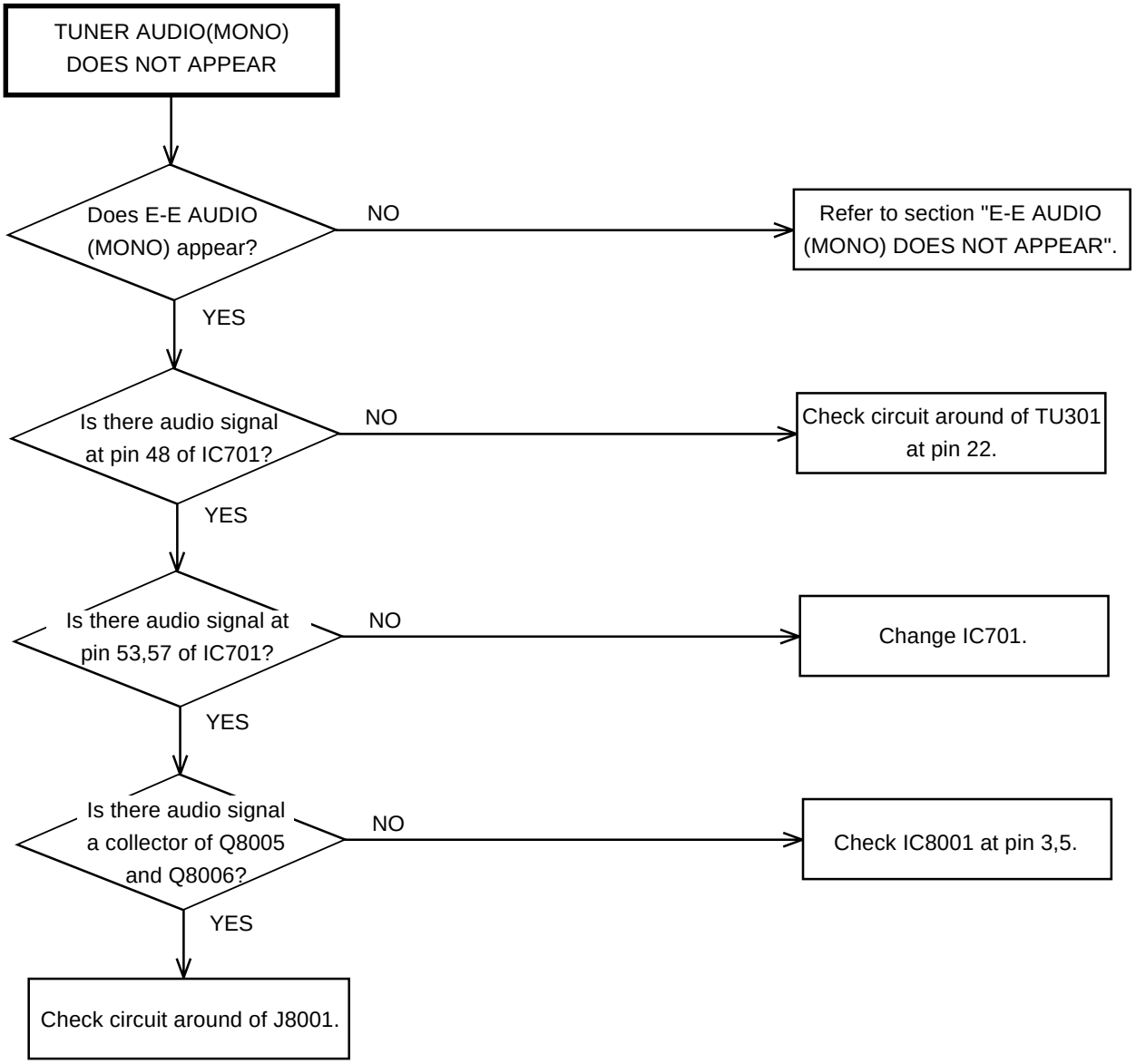
TROUBLESHOOTING GUIDE



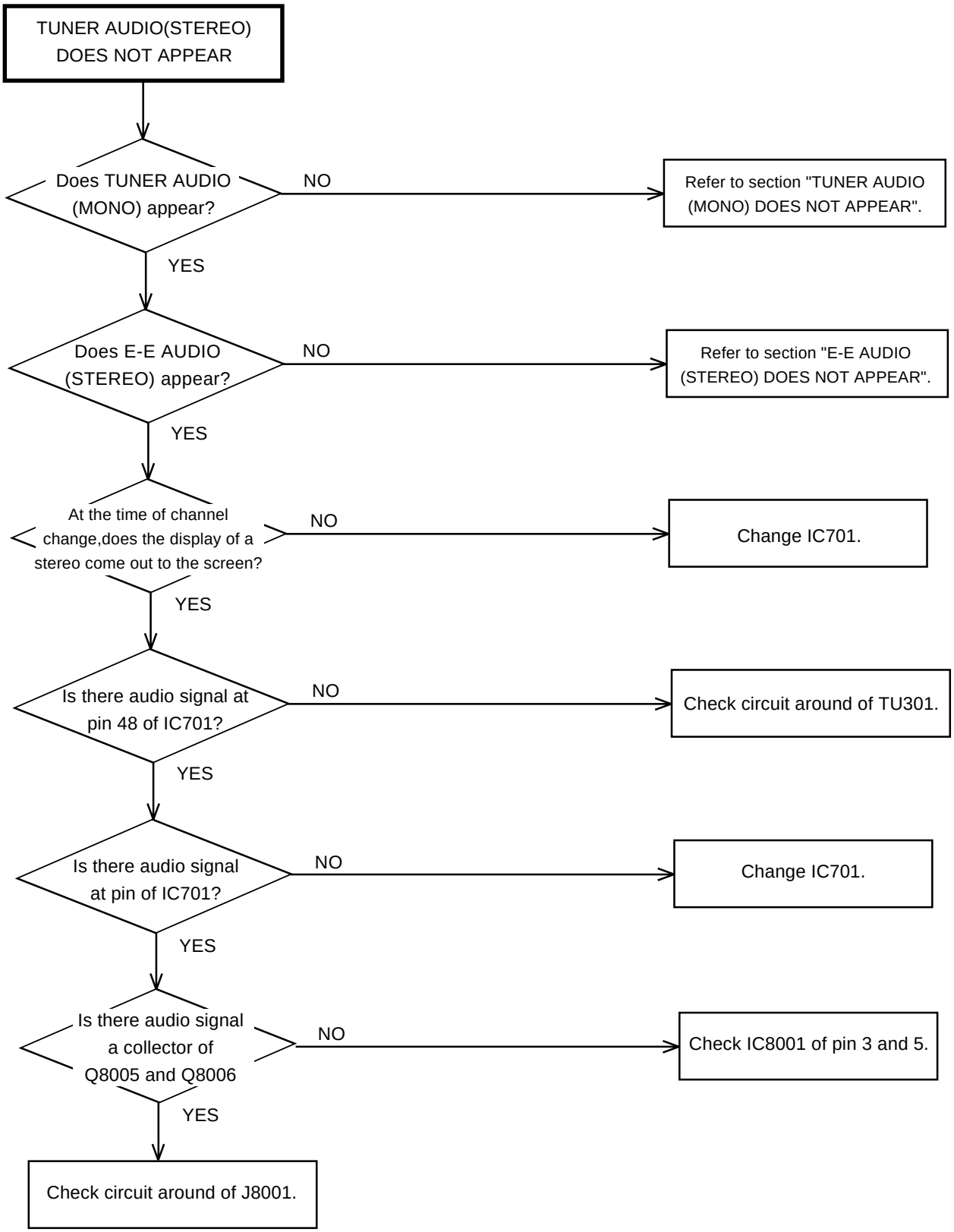
TROUBLESHOOTING GUIDE



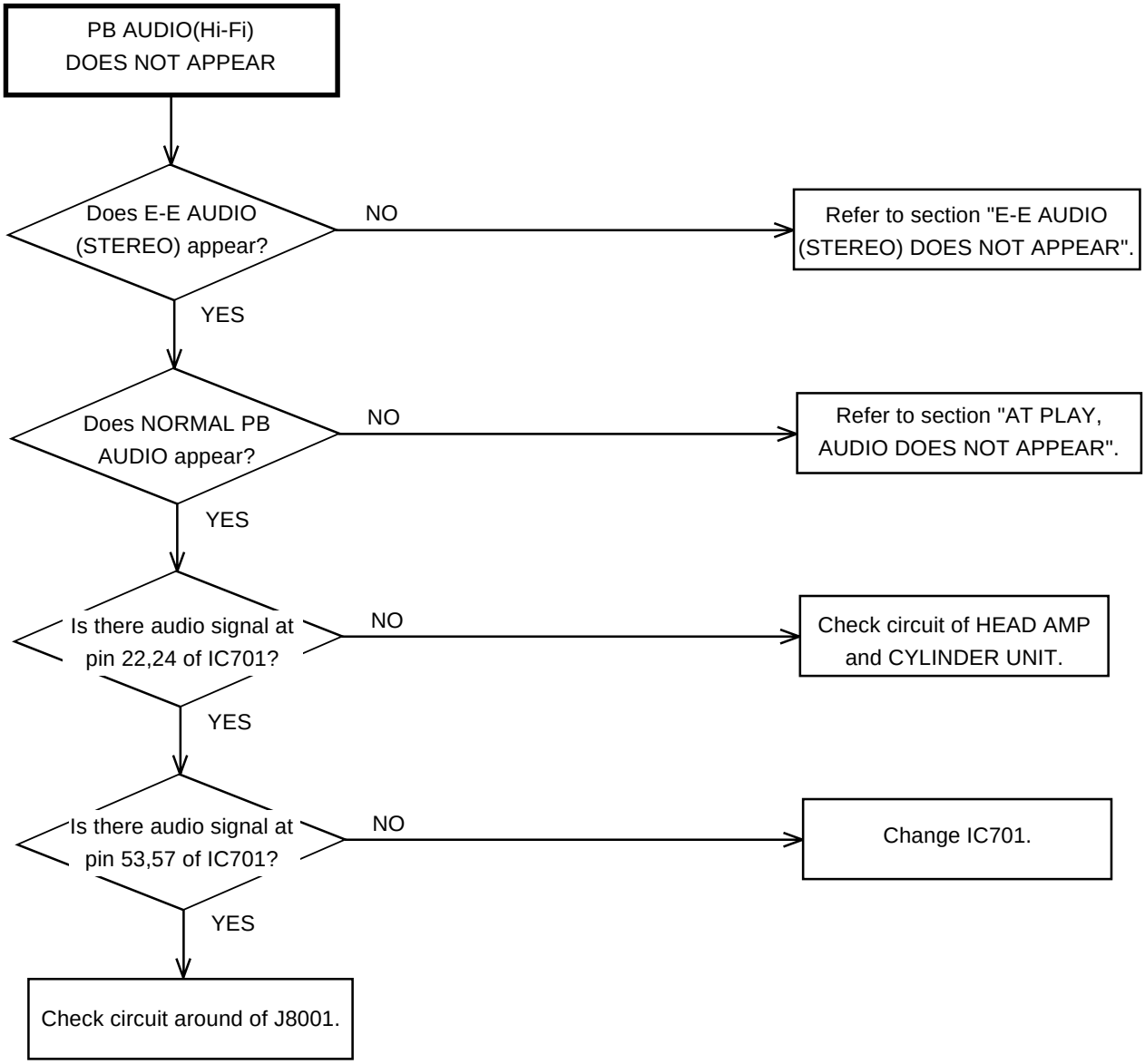
TROUBLESHOOTING GUIDE


TUNER AUDIO(MONO) DOES NOT APPEAR
Does E-E AUDIO (MONO) appear?
NO
Refer to section "E-E AUDIO (MONO) DOES NOT APPEAR".
YES
Is there audio signal at pin 48 of IC701?
NO
Check circuit around of TU301 at pin 22.
YES
Is there audio signal at pin 53,57 of IC701?
NO
Change IC701.
YES
Is there audio signal a collector of Q8005 and Q8006?
NO
Check IC8001 at pin 3,5.
YES
Check circuit around of J8001.

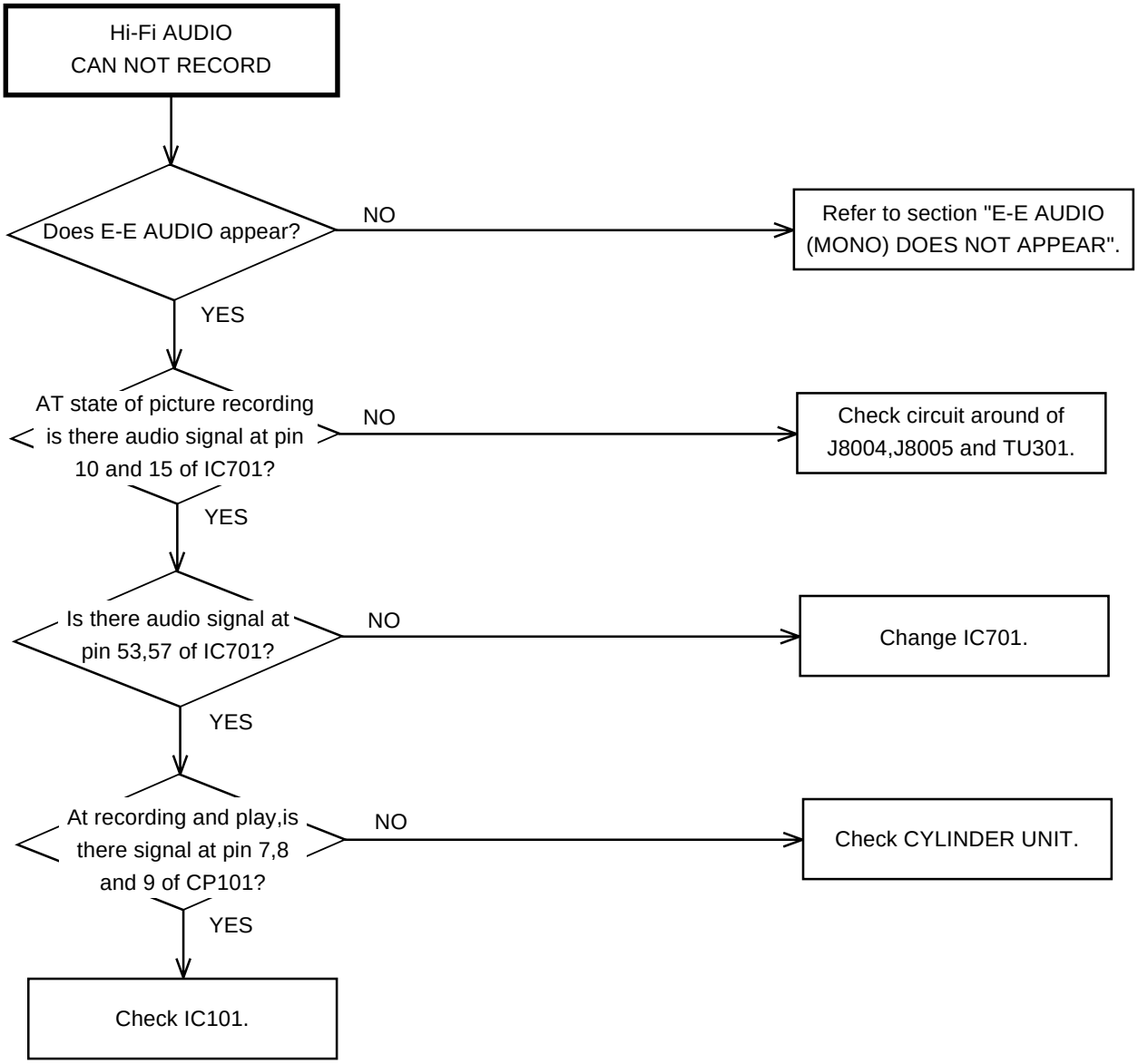
TROUBLESHOOTING GUIDE


TUNER AUDIO(STEREO) DOES NOT APPEAR
Does TUNER AUDIO (MONO) appear?
NO
Refer to section "TUNER AUDIO (MONO) DOES NOT APPEAR".
YES
Does E-E AUDIO (STEREO) appear?
NO
Refer to section "E-E AUDIO (STEREO) DOES NOT APPEAR".
YES
At the time of channel change,does the display of a stereo come out to the screen?
NO
Change IC701.
YES
Is there audio signal at pin 48 of IC701?
NO
Check circuit around of TU301.
YES
Is there audio signal at pin of IC701?
NO
Change IC701.
YES
Is there audio signal a collector of Q8005 and Q8006
NO
Check IC8001 of pin 3 and 5.
YES
Check circuit around of J8001.

TROUBLESHOOTING GUIDE

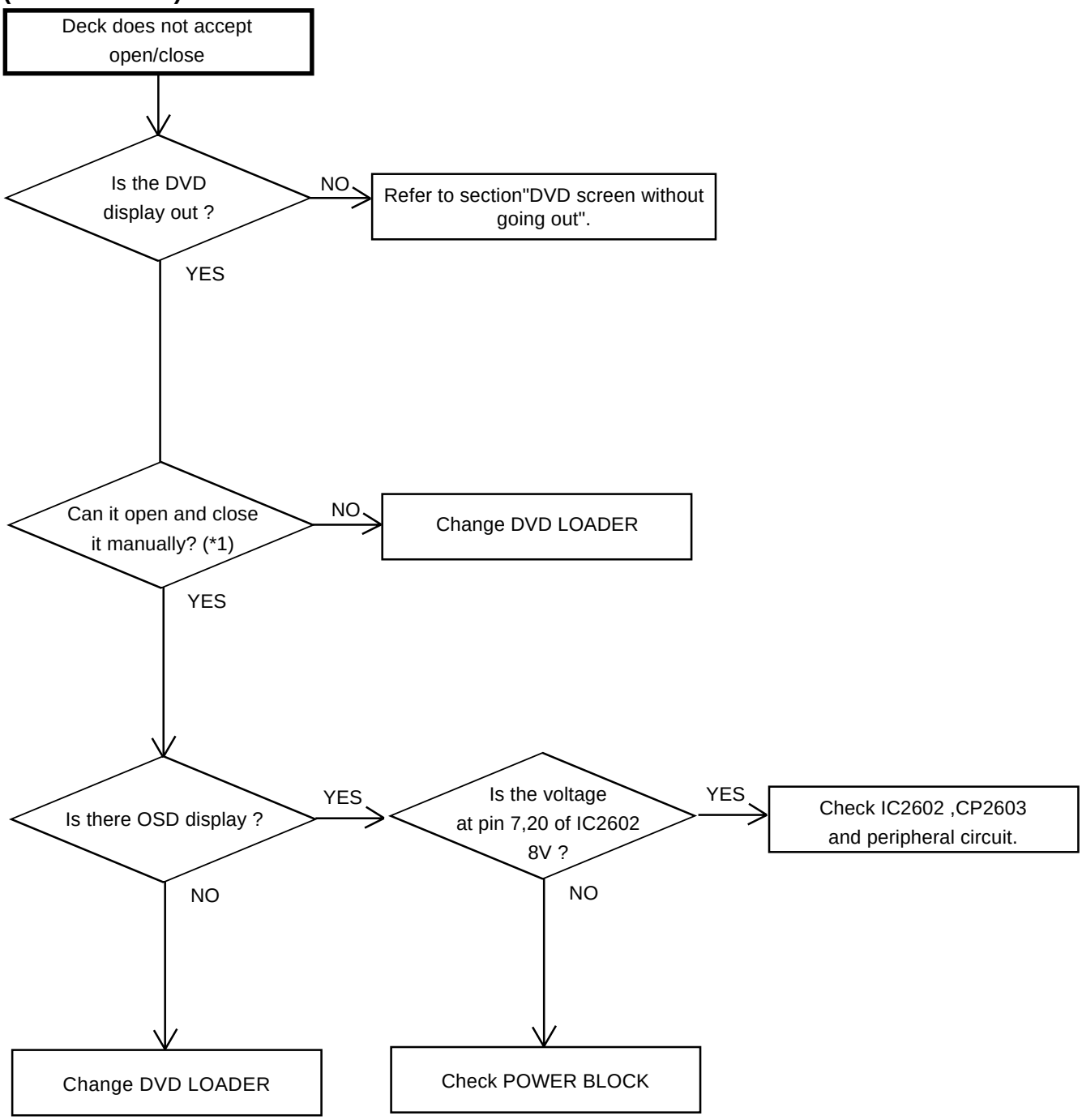


TROUBLESHOOTING GUIDE


Hi-Fi AUDIO
CAN NOT RECORD
Does E-E AUDIO appear?
NO
Refer to section "E-E AUDIO (MONO) DOES NOT APPEAR".
YES
AT state of picture recording is there audio signal at pin 10 and 15 of IC701?
NO
Check circuit around of J8004,J8005 and TU301.
YES
Is there audio signal at pin 53,57 of IC701?
NO
Change IC701.
YES
At recording and play,is there signal at pin 7,8 and 9 of CP101?
NO
Check CYLINDER UNIT.
YES
Check IC101.

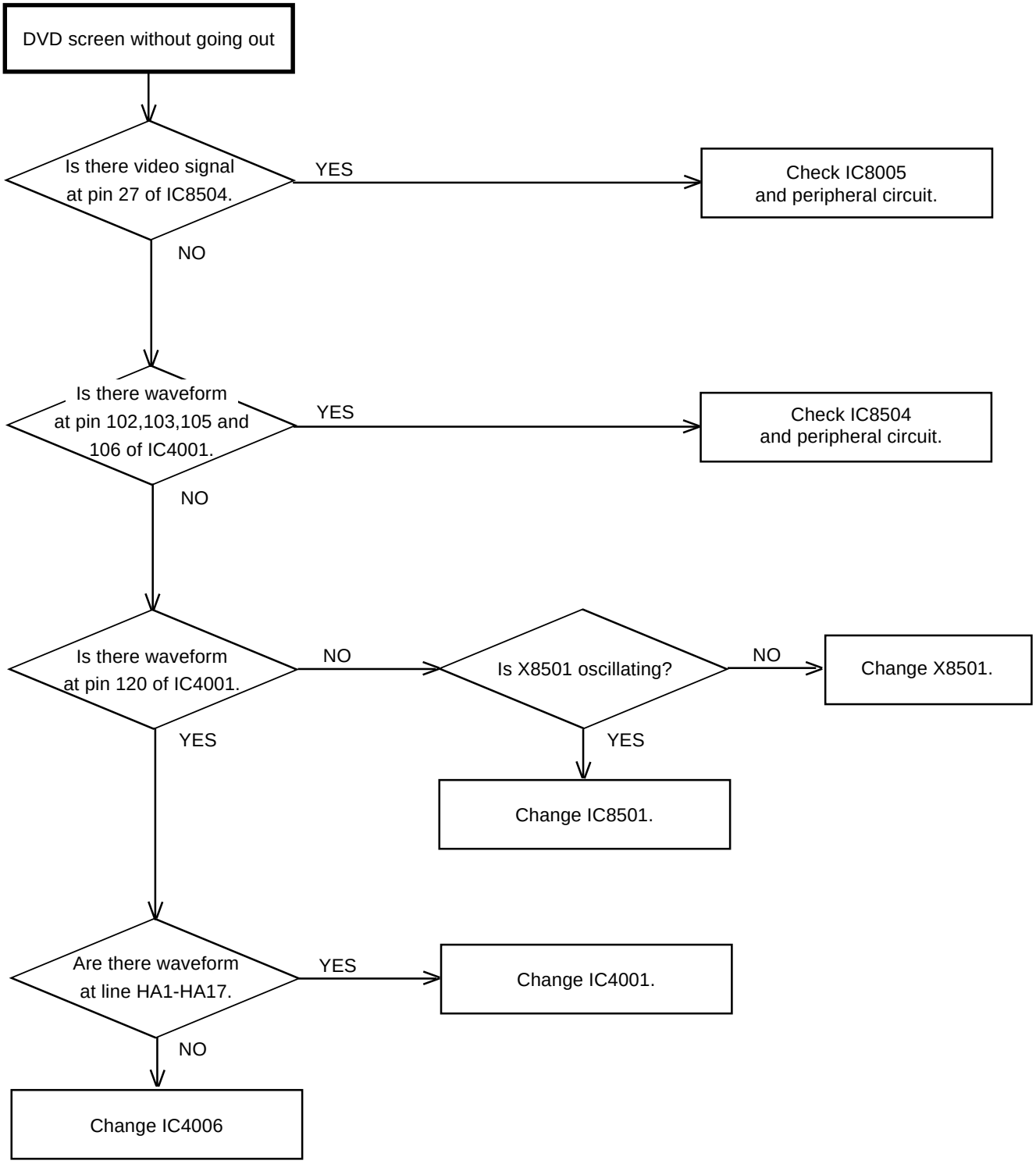
TROUBLESHOOTING GUIDE

(DVD SECTION)

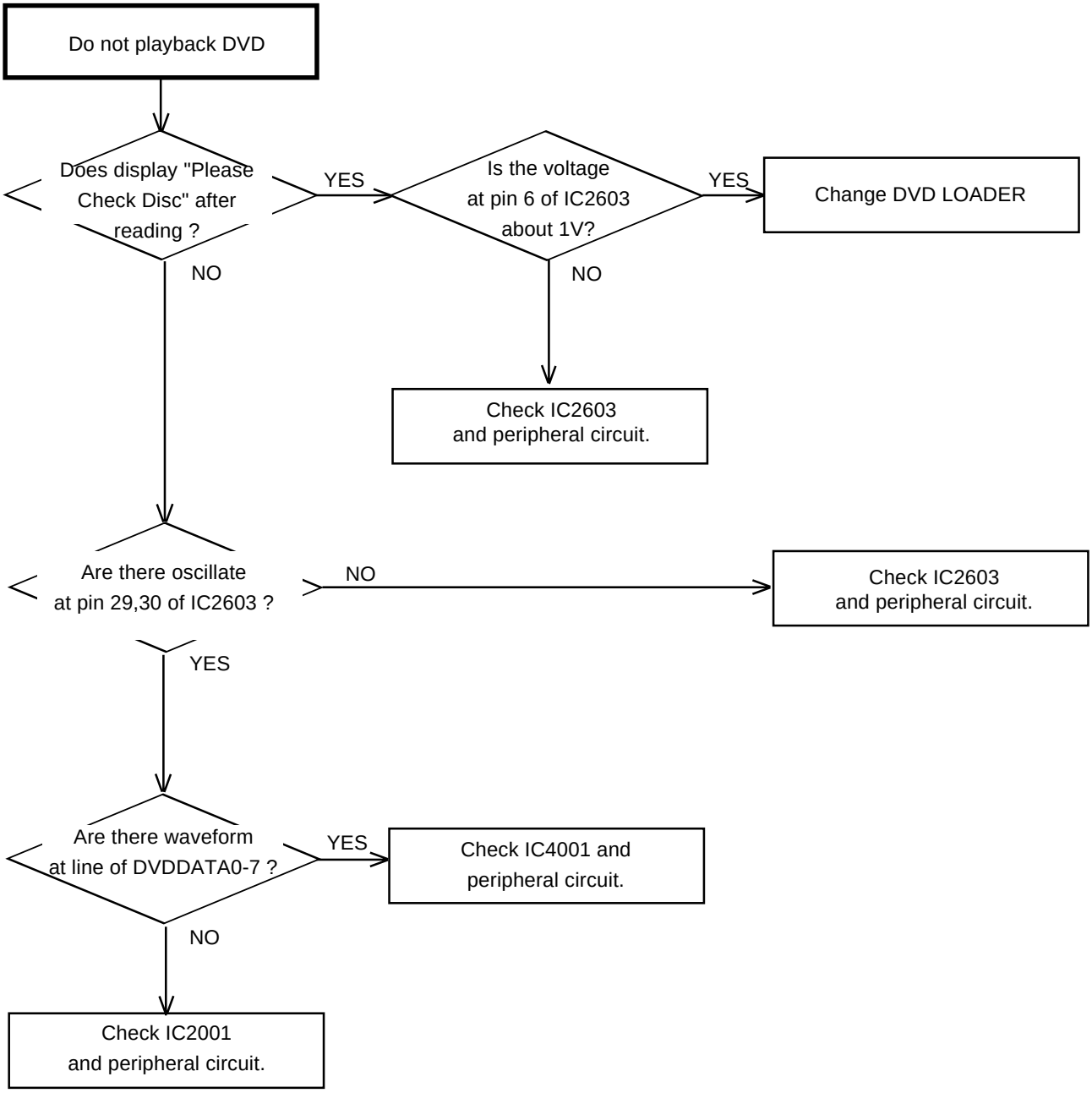


*1:Turn GEAR of DVD DECKfront lower part,
to open and close TRAY manually

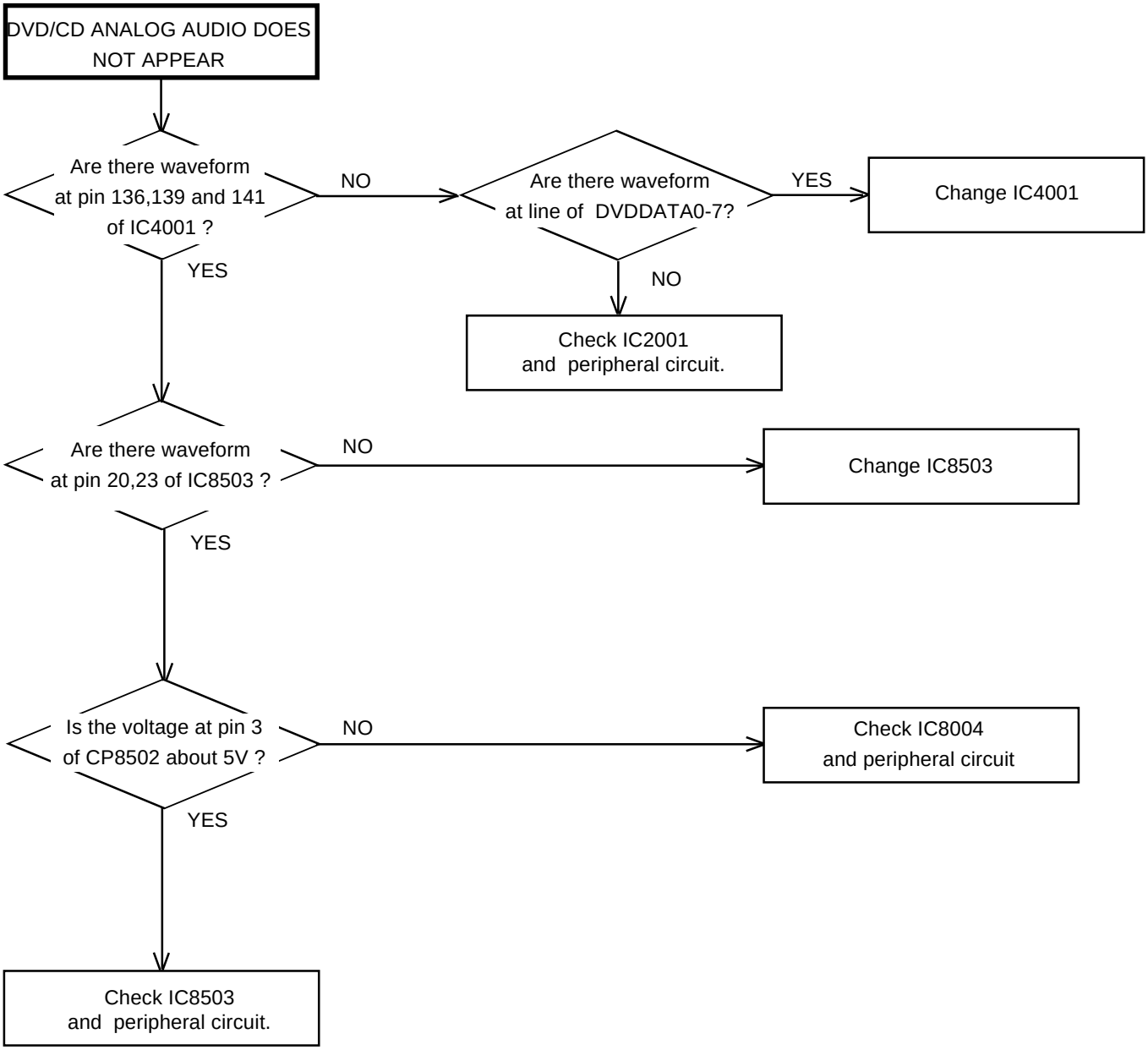
TROUBLESHOOTING GUIDE



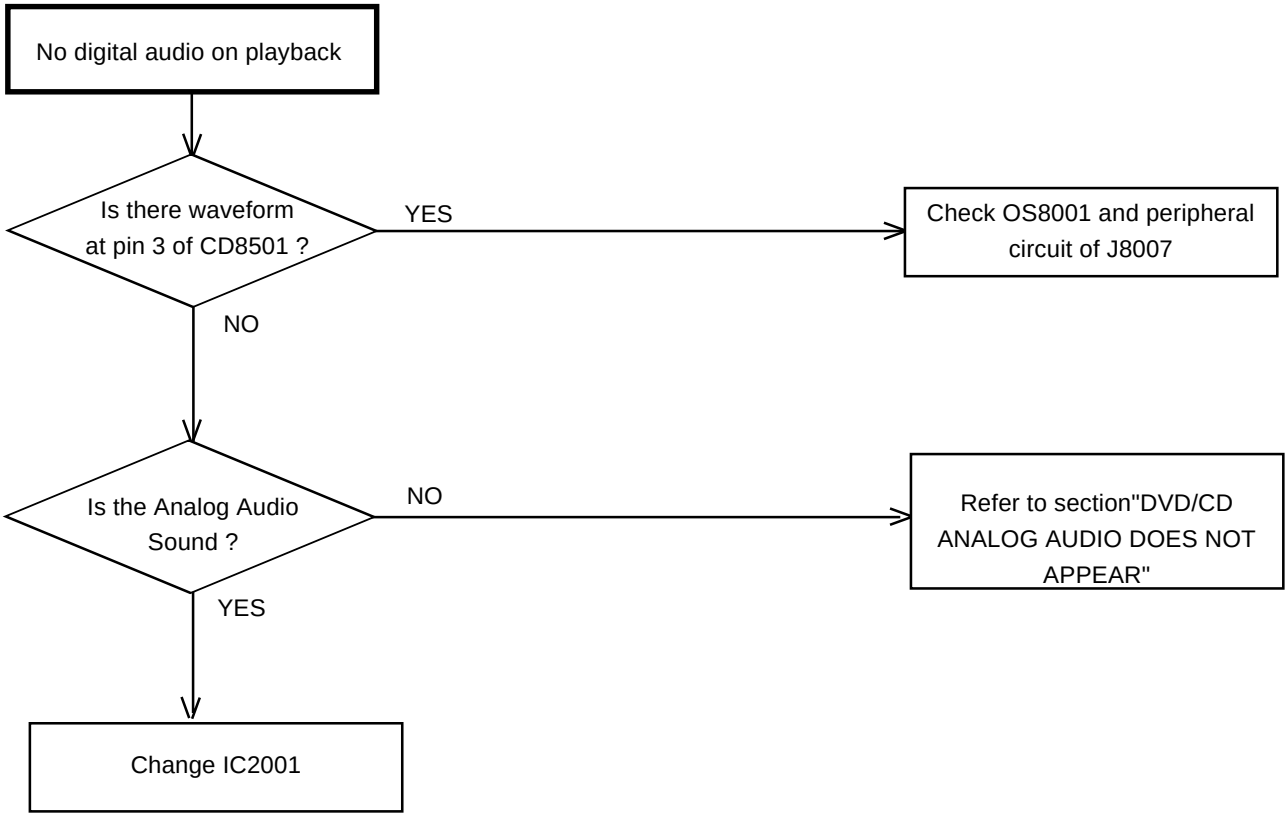
TROUBLESHOOTING GUIDE



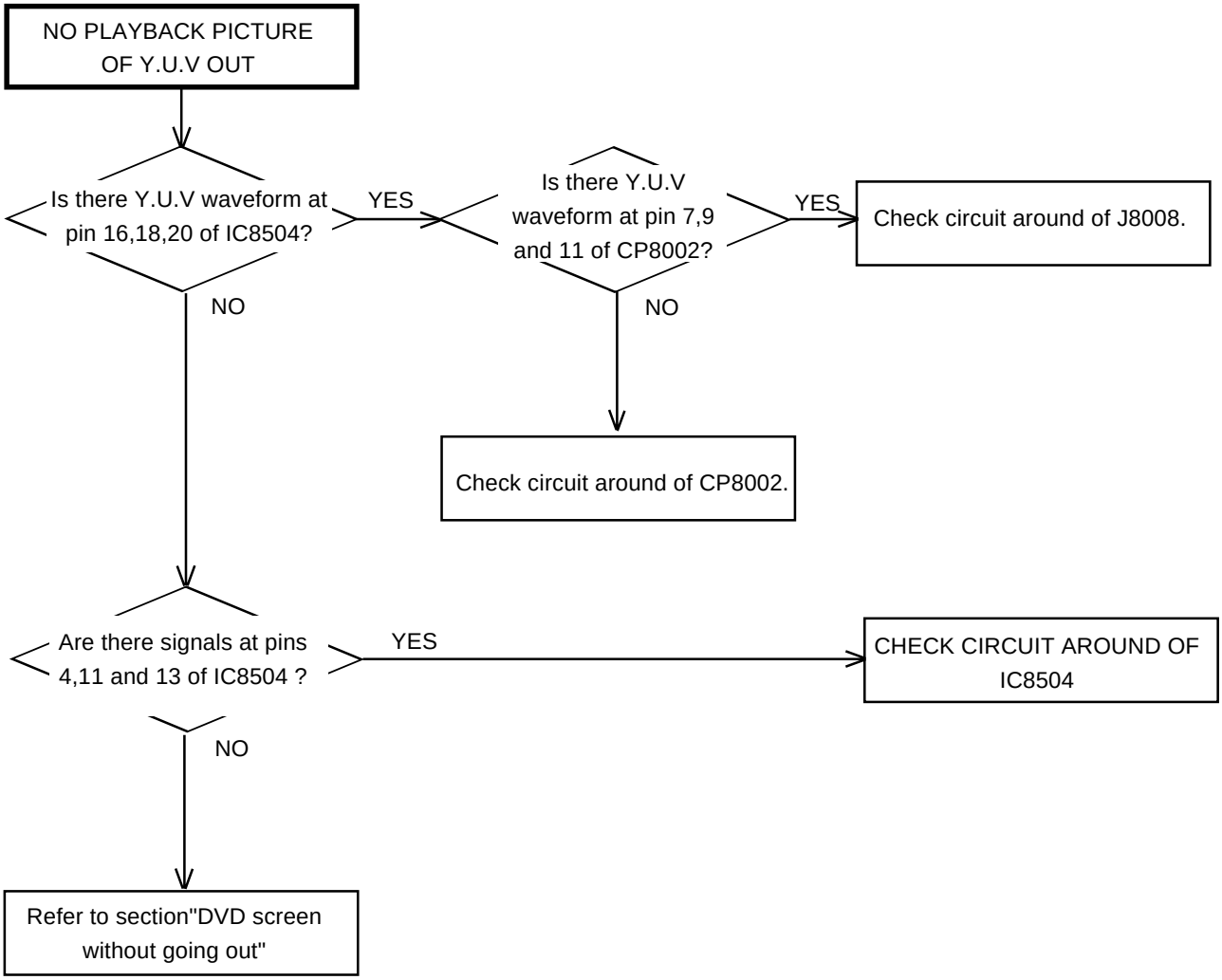
TROUBLESHOOTING GUIDE



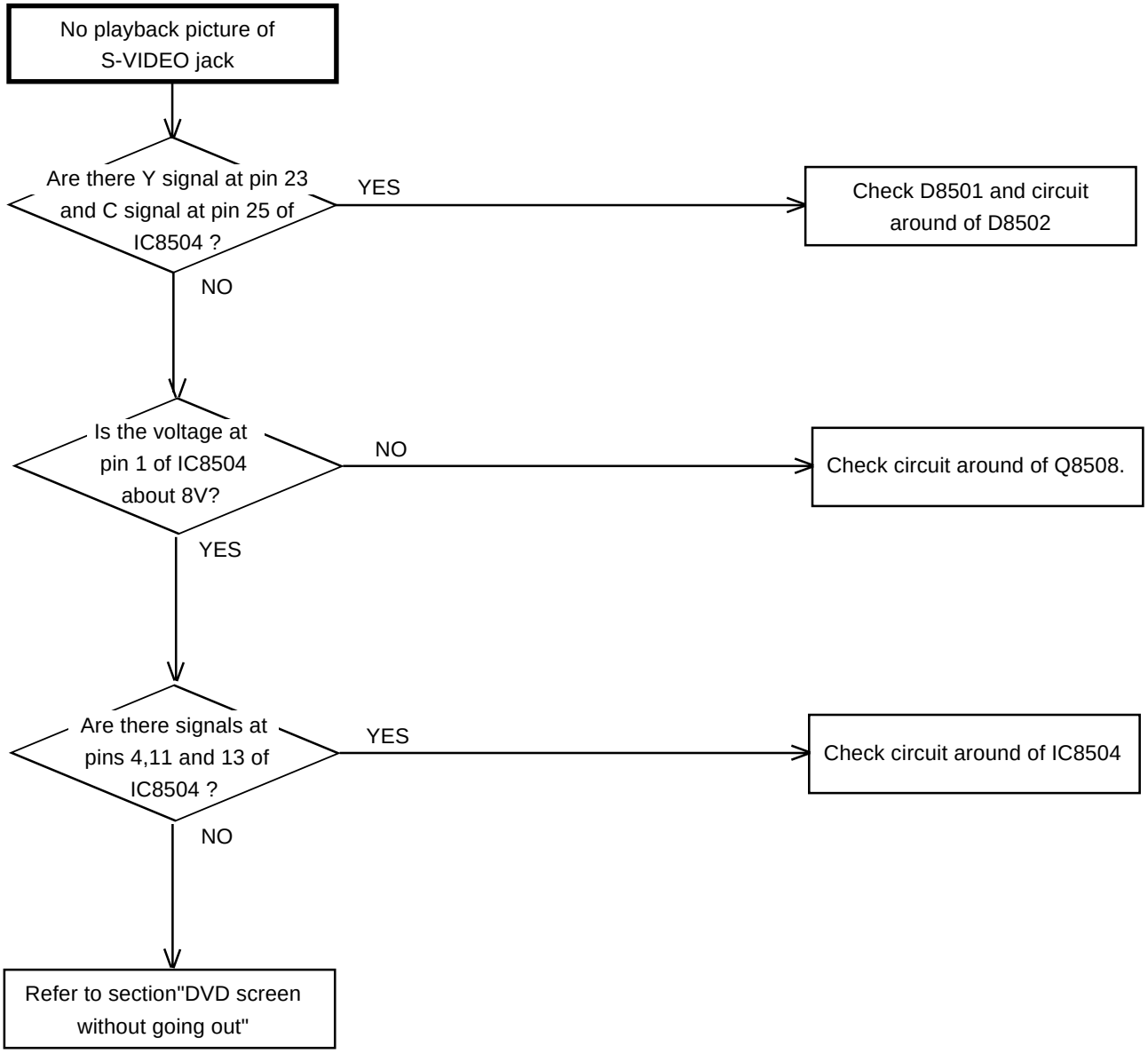
TROUBLESHOOTING GUIDE


No digital audio on playback
Is there waveform at pin 3 of CD8501 ?
YES
Check OS8001 and peripheral circuit of J8007
NO
Is the Analog Audio Sound ?
NO
Refer to section"DVD/CD ANALOG AUDIO DOES NOT APPEAR"
YES
Change IC2001

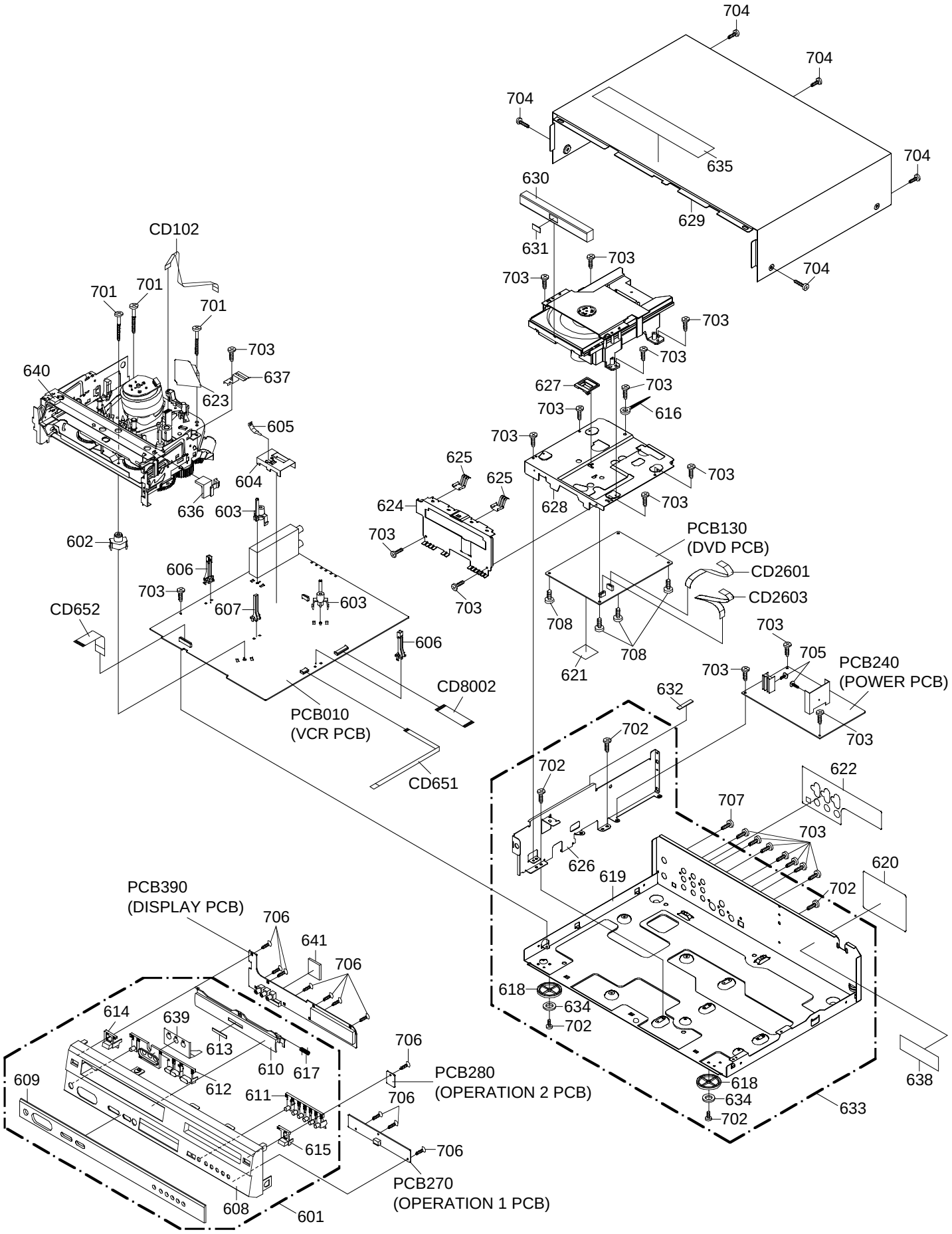
TROUBLESHOOTING GUIDE


NO PLAYBACK PICTURE OF Y.U.V OUT
Is there Y.U.V waveform at pin 16,18,20 of IC8504?
YES
Is there Y.U.V waveform at pin 7,9 and 11 of CP8002?
YES
Check circuit around of J8008.
NO
Check circuit around of CP8002.
NO
Are there signals at pins 4,11 and 13 of IC8504 ?
YES
CHECK CIRCUIT AROUND OF IC8504
NO
Refer to section"DVD screen without going out"

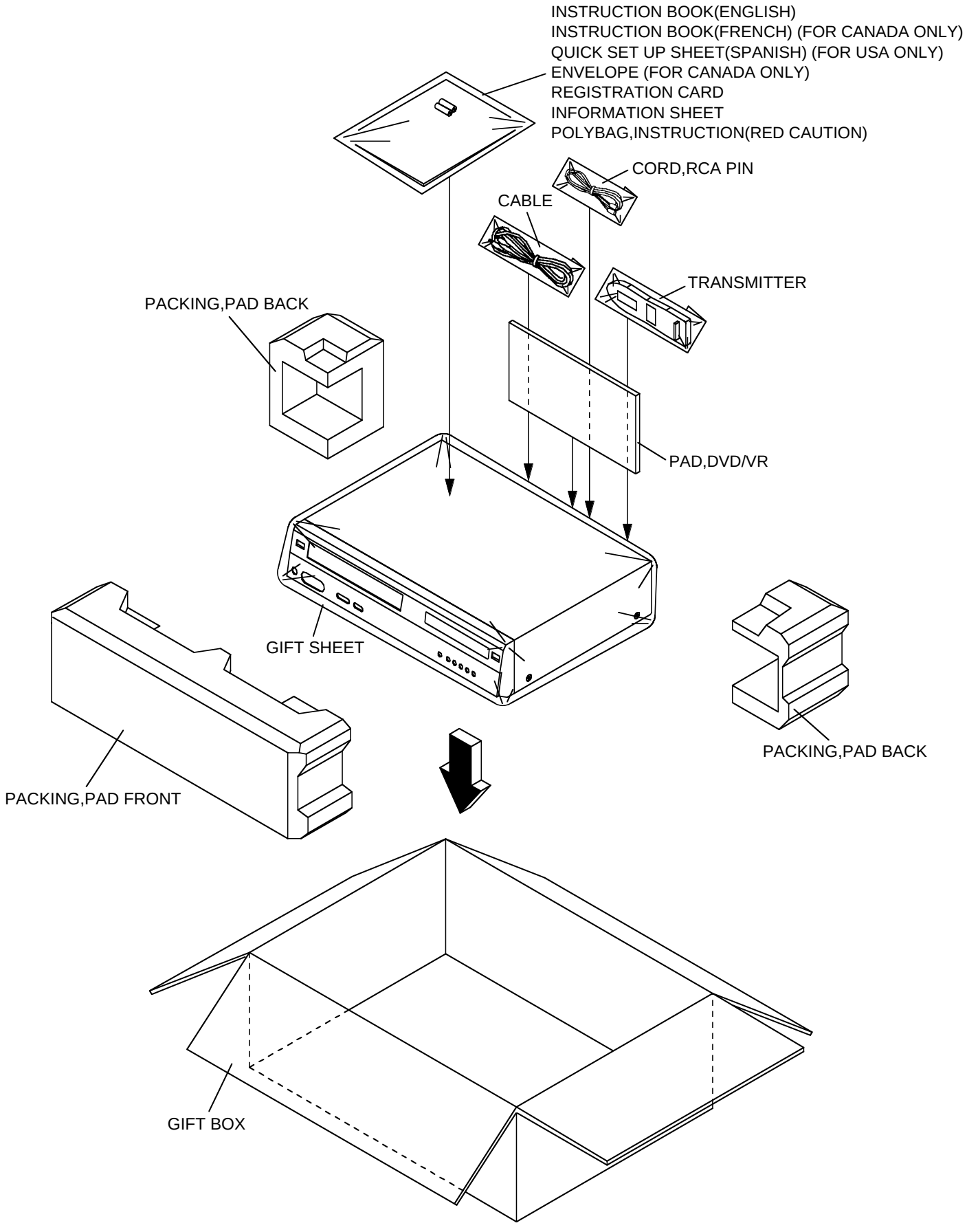
TROUBLESHOOTING GUIDE


No playback picture of S-VIDEO jack
Are there Y signal at pin 23 and C signal at pin 25 of IC8504 ?
YES
Check D8501 and circuit around of D8502
NO
Is the voltage at pin 1 of IC8504 about 8V?
NO
Check circuit around of Q8508.
YES
Are there signals at pins 4,11 and 13 of IC8504 ?
YES
Check circuit around of IC8504
NO
Refer to section"DVD screen without going out"

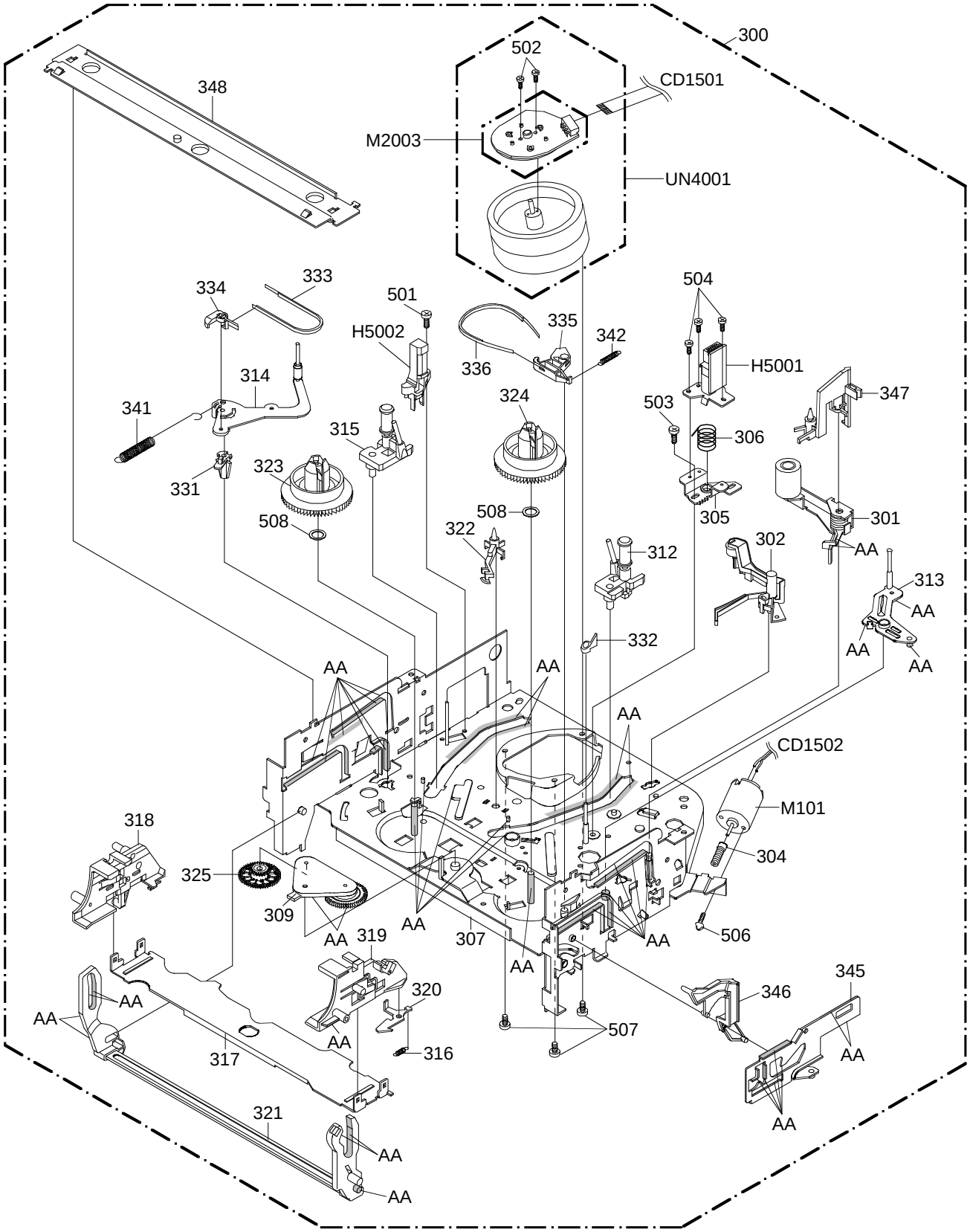
MECHANICAL EXPLODED VIEW



PACKING DIAGRAM



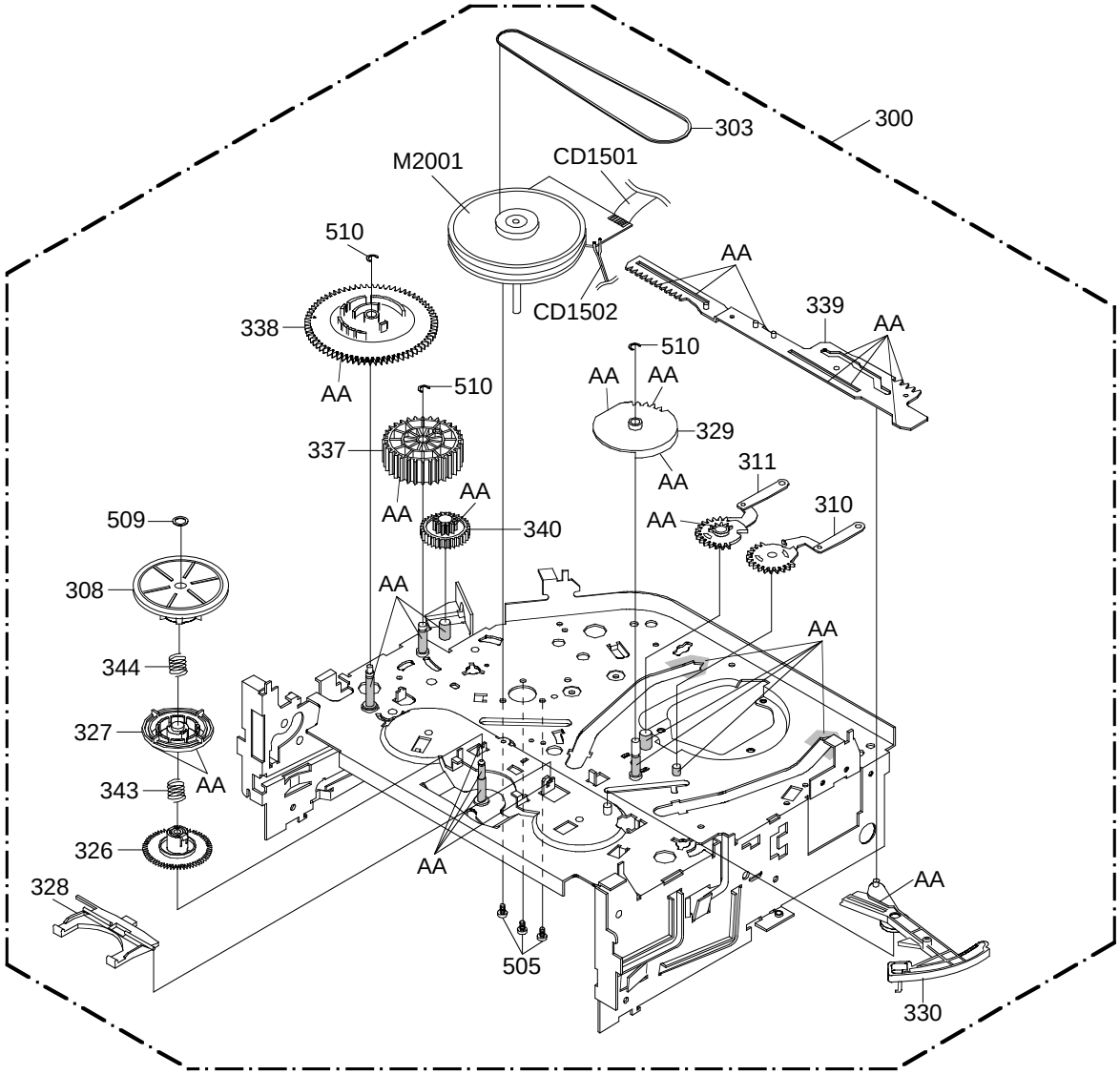
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME		DESCRIPTION
601	79099160	CABINET,FRONT ASSY		A2A706C720
602	79099161	HOLDER,DECK		701WPA0686
603	79099162	HOLDER,DECK		701WPA0751
604	79099163	SHIELD,CASE HEAD AMP		752WSA0230
605	79099164	SPRING,EARTH HEAD AMP		753WUAA006
606	79099165	HOLDER,EOT SENSOR		85OP700036
607	79099166	HOLDER,LED		85OP700037
608		CABINET,FRONT		701WPJ1108
609		PLATE,DISPLAY		711JPD0125
610		FLAP		712WPB0103
611		BUTTON,FRAME(R)		735WPJ0209
612		BUTTON,FRAME(L)		735WPB0193
613	79099167	BADGE,BRAND		7235490018
614		BUTTON,VCR EJECT		735WPJ0210
615		BUTTON,DVD EJECT		735WPJ0211
616		CORD CLIP UL CO.		8995034000
617		SPRING,FLAP		743WKA0032
618	79099168	LEG,BOTTOM		704WPC0001
619		PLATE,BOTTOM		702WSA0110
620		SHEET,RATING (FOR USA)		7225490072
		SHEET,RATING (FOR CANADA)		7225490078
621		SHEET,IC		7230007461
622		SHEET,JACK		7230007448
623	79099169	COVER,AC HEAD		752WSA0275
624		SHIELD,FRONT-DVD		753WSA0151
625		SPRING,EARTH		753WUA0060
626		ANGLE,CENTER		761WSA0082
627		HOLDER,FFC		761WPA0244
628		ANGLE,DECK		761WSA0089
629	79099170	CABINET,TOP		702WSB0066
630	79099171	PLATE,TRAY FRONT		712WPB0107
631	79099172	SHEET,DVD		7235630003
632		CUSHION	20x5xT1	800WFA0055
633		CABINET,BOTTOM ASSY		A2A706C730
634		CUSHION	23x13xT3	800WR0A023
635		POP LABEL		7230007463
636		HOLDER,TOP		701WPA0781
637		SPRING,EARTH-TOP		753WUA0062
638		SHEET,CAUTION		7260000332
639		SHIELD,3PIN		752WSA0285
640		CUSHION,LEG		800WFAA013
641		CUSHION,FFC		800WF00053
701		SCREW,TAP TITE(B) R PAN	3x29	8109130B94
702		SCREW,TAP TITE(B) R BIND	3x7	8109230704
703		SCREW,TAP TITE(B) BIND	3x8	8109230804
704		SCREW,TAP TITE(B) BIND(3D)	3x6	8109K30601
705		SCREW,TAP TITE(B) WH7	3x10	8109I30A04
706		SCREW TAP TITE(P) FLAT	2.6x8	8110326804
707		SCREW,TAP TITE(S) BIND	3x4	8107230404
708		SCREW,TAP TITE(B) WH7	3x8	8109I30804
---		GIFT SHEET		791WHA0100
ZK02		PACKING,PAD FRONT		792WHA0355
ZK02		PACKING,PAD BACK		792WHA0358
---		GIFT BOX (FOR USA)		793WCD1395
		GIFT BOX (FOR CANADA)		793WCD1412
---		PAD,DVD/VR	155x250	795WCA0662
---		INSTRUCTION BOOK KIT (FOR USA)		A2A706A975
		INSTRUCTION BOOK KIT (FOR CANADA)		A2A709A975
---	79099173	INSTRUCTION BOOK(ENGLISH) (FOR USA)		J2A70601
	79099175	INSTRUCTION BOOK(ENGLISH) (FOR CANADA)		J2A70901
---	79099176	INSTRUCTION BOOK (FRENCH) (FOR CANADA ONLY)		J2A70910
---	79099174	QUICK SET UP SHEET(SPANISH) (FOR USA ONLY)		J2A70607
---		REGISTRATION CARD (FOR USA)		J2A70617
		REGISTRATION CARD (FOR CANADA)		J2A70917
---		INFORMATION SHEET (FOR USA)		J2A70629
		INFORMATION SHEET (FOR CANADA)		J2A70929
---	AD300502	ENVELOPE (FOR CANADA ONLY)		J3I70725
---	AD300812	POLYBAG,INSTRUCTION(RED CAUTION)		JB5UD400

CHASSIS REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME		DESCRIPTION
300	79099177	DECK ASSY	A2A706A420A	A2A706A420A
301	79099178	PINCH ROLLER BLOCK		85OA400234
302	79099179	AHC ASS'Y		85OA500026
303	79099180	BELT,CAPSTAN (S)		85OP200290
304	79099181	WORM		85OP600581
305	79099182	BASE,AC HEAD		85OP500083
306	79099183	SPRING,AC HEAD		85OP800324
307	79099184	MAIN CHASSIS ASS'Y		85OA000459
308	79099185	CLUTCH ASS'Y		85OA200089
309	79099186	ARM IDLER ASS'Y		85OA200090
310	79099187	LOADING ARM S UNIT		85OA300065
311	79099188	LOADING ARM T UNIT		85OA300066
312	79099189	INCLINED BASE T UINT 3S		85OA400223
313	79099190	P5 ARM ASS'Y 2		85OA400232
314	79099191	TENSION ARM ASS'Y 2		85OA400235
315	79099192	INCLINED BASE S UNIT		85OA400231
316	79099193	SPRING,LOCKER		85OP800358
317	79099194	CASS,HOLDER		85OP900736
318	79099195	CASS,SIDE L		85OP900748
319	79099196	CASS,SIDE R		85OP900749
320	79099197	LOCKER,R		85OP900739
321	79099198	LINK UNIT		85OA900228
322	79099199	POST,CASS GUIDE		85OP000496
323	79099200	REEL,S (S)		85OP200316
324	79099201	REEL,T (S)		85OP200317
325	79099202	GEAR,IDLER		85OP200308
326	79099203	GEAR,CLUTCH		85OP200311
327	79099204	GEAR,COUPLING		85OP200312
328	79099205	LEVER,CLUTCH		85OP200313
329	79099206	GEAR,MAIN LOADING		85OP300194
330	79099207	LEVER,TENSION		85OP400490
331	79099208	HOLDER,TENSION		85OP400492
332	79099209	CAP.P4		85OP400520
333	79099210	BAND,TENSION		85OP400539
334	79099211	CONNECT,TENSION		85OP400533
335	79099212	ARM,BRAKE T		85OP600573
336	79099213	BAND,BRAKE T		85OP600583
337	79099214	CAM,PINCH ROLLER		85OP600577
338	79099215	CAM,MAIN		85OP600578
339	79099216	ROD,MAIN		85OP600579
340	79099217	GEAR,JOINT		85OP600582
341	79099218	SPRING,TENSION		85OP800322
342	79099219	SPRING,BRAKE T		85OP800360
343	79099220	SPRING,COUPLING		85OP800355
344	79099221	SPRING,RING		85OP800356
345	79099222	LEVER,LINK 2		85OP900750
346	79099223	LEVER,FLAP		85OP900744
347	79099224	CASS,OPENER		85OP900745
348	79099225	BRACKET,TOP 3V		85OP900746
501	79099226	SCREW,TAP TITE(S) BIND	2.6x8	8107226804
502	79099227	SCREW,TAP TITE(S) BIND	2.6x5	8107226504
503	79099228	SCREW,TAP TITE(S) BIND	2.6x4	8107226404
504	79099229	SCREW,PAN	M2x6	8102120604
505	79099230	SCREW,TAP TITE(B) PAN	2.6x6	8109126604
506	79099231	SCREW/WASHER(A)	M3x4	810A130404
507	79099232	SCREW/WASHER(A)	M2.6x5	810A126504
508	79099233	POLYSLIDER WASHER	2.6x4.7xT0.13	82Q264713N
509	79099234	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5	82P184505N
510	79099235	E-RING	3.0	83ETW30000
CD1501	79099236	CORD JUMPER	SMCD-7X151	122H071603
CD1502	79099237	CORD JUMPER	2Y021902	122Y021902
H5001	79099238	HEAD (AUDIO CONTROL)	HVMXA1072A	1523D91034
H5002	79099239	HEAD (FULL ERASE)	HVFHP0032A	1543D02013
⚠ M101	79099240	MOTOR (LOADING)	MXN13FB12K3	1596P98001
⚠ M2001	79099241	CAPSTAN DD UNIT	F2QVB08	1510S98036
M2003	79099242	MICRO MOTOR	I2OAL05	1589S11017
⚠ UN4001		CYLINDER UNIT ASS'Y	A2A501A500	A2A501A500

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME	DESCRIPTION	
		RESISTORS		
R101	-----	RC	560 OHM 1/8W	R903N8561J
R102	-----	RC	10K OHM 1/8W	R903N8103J
R103	-----	RC	10K OHM 1/8W	R903N8103J
R104	-----	RC	6.8 OHM 1/4W	R002T46R8J
R105	-----	RC	10K OHM 1/8W	R903N8103J
R106	-----	RC	6.8K OHM 1/8W	R903N8682J
R107	-----	RC	3.3K OHM 1/8W	R903N8332J
R108	-----	RC	22K OHM 1/8W	R903N8223J
R110	-----	RC	15K OHM 1/8W	R903N8153J
R111	-----	RC	12K OHM 1/8W	R903N8123J
R112	-----	RC	330K OHM 1/8W	R903N8334J
R113	-----	RC	270 OHM 1/8W	R903N8271J
R114	-----	RC	18K OHM 1/8W	R903N8183J
R115	-----	RC	820 OHM 1/8W	R903N8821J
R116	-----	RC	15K OHM 1/8W	R903N8153J
R117	-----	RC	6.8K OHM 1/8W	R903N8682J
R119	-----	RC	2.2K OHM 1/8W	R903N8222J
R120	-----	RC	220 OHM 1/8W	R903N8221J
R121	-----	RC	1K OHM 1/4W	R002T4102J
R122	-----	RC	100K OHM 1/8W	R903N8104J
R123	-----	RC	2.2K OHM 1/4W	R002T4222J
R124	-----	RC	82K OHM 1/8W	R903N8823J
R127	-----	RC	680K OHM 1/8W	R903N8684J
R129	-----	RC	1.8K OHM 1/4W	R002T4182J
R131	-----	RC	1.5K OHM 1/8W	R903N8152J
R132	-----	RC	3.3K OHM 1/8W	R903N8332J
R133	-----	RC	8.2K OHM 1/8W	R903N8822J
R136	-----	RC	22K OHM 1/8W	R903N8223J
R137	-----	RC	12K OHM 1/4W	R002T4123J
R138	-----	RC	22K OHM 1/8W	R903N8223J
R139	-----	RC	12K OHM 1/8W	R903N8123J
R142	-----	RC	820 OHM 1/8W	R903N8821J
R301	-----	RC	22K OHM 1/8W	R903N8223J
R302	-----	RC	1K OHM 1/8W	R903N8102J
R304	-----	RC	10K OHM 1/8W	R903N8103J
⚠R501	79099001	RC	3.3M OHM 1/2W	R0G3K2335K
⚠R502	79099002	R,METAL OXIDE	0.39 OHM 1W	R3X181R39J
⚠R504	AD301141	R,METAL OXIDE	560 OHM 1W	R3X181561J
R506	-----	RC	1M OHM 1/2W	R002T2105J
R507	-----	RC	56K OHM 1/4W	R002T4563J
R508	-----	RC	470 OHM 1/4W	R002T4471J
R509	-----	RC	10K OHM 1/4W	R002T4103J
R510	-----	RC	470 OHM 1/2W	R002T2471J
⚠R512	79099004	R,METAL OXIDE	27K OHM 1W	R3X181273J
R513	-----	RC	390 OHM 1/4W	R002T4391J
⚠R516	79099005	R,FUSE	0.22 OHM 1W	R63581R22J
R517	-----	RC	1K OHM 1/2W	R002T2102J
R518	-----	RC	150 OHM 1/4W	R002T4151J
R519	-----	RC	1K OHM 1/4W	R002T4102J
R520	-----	R,METAL	3.3K OHM 1/6W	R4X5T6332F
R521	-----	RC	270 OHM 1/4W	R002T4271J
R522	-----	R,METAL	3.3K OHM 1/6W	R4X5T6332F
R524	-----	RC	820 OHM 1/4W	R002T4821J
R525	-----	RC	10K OHM 1/4W	R002T4103J
R531	-----	RC	680 OHM 1/2W	R00202681J
R536	-----	RC	1K OHM 1/4W	R002T4102J
R601	-----	RC	1K OHM 1/4W	R002T4102J
R602	-----	RC	100K OHM 1/4W	R002T4104J
R603	-----	RC	6.8 OHM 1/2W	R002T26R8J
R604	-----	RC	10 OHM 1/4W	R002T4100J
R605	-----	RC	47K OHM 1/4W	R002T4473J
R606	-----	RC	2.7K OHM 1/4W	R002T4272J
R607	-----	RC	1.8K OHM 1/4W	R002T4182J
R608	-----	RC	1.5K OHM 1/4W	R002T4152J
R610	-----	RC	100 OHM 1/4W	R002T4101J
R611	-----	RC	75 OHM 1/4W	R002T4750J
R612	-----	RC	68 OHM 1/4W	R002T4680J
R613	-----	RC	1K OHM 1/4W	R002T4102J
R681	-----	RC	13K OHM 1/4W	R002T4133J
R683	-----	RC	6.8K OHM 1/4W	R002T4682J
R685	-----	RC	3.9K OHM 1/4W	R002T4392J

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.		PART NAME	DESCRIPTION
			RESISTORS	
R686	-----	RC	6.8K OHM 1/4W	R002T4682J
R687	-----	RC	2.7K OHM 1/4W	R002T4272J
R688	-----	RC	3.3K OHM 1/4W	R002T4332J
R689	-----	RC	10K OHM 1/4W	R002T4103J
R690	-----	RC	330 OHM 1/4W	R002T4331J
R694	-----	RC	330 OHM 1/4W	R002T4331J
R701	-----	RC	390 OHM 1/8W	R903N8391J
R702	-----	RC	390 OHM 1/8W	R903N8391J
R703	-----	RC	3.3K OHM 1/8W	R903N8332J
R704	-----	RC	3.3K OHM 1/8W	R903N8332J
R705	-----	RC	6.8K OHM 1/10W	R801R7682J
R706	-----	RC	47K OHM 1/10W	R801R7473J
R707	-----	RC	47K OHM 1/8W	R903N8473J
R708	-----	RC	6.8K OHM 1/8W	R903N8682J
R709	-----	RC	6.8K OHM 1/10W	R801R7682J
R710	-----	RC	47K OHM 1/10W	R801R7473J
R711	-----	RC	47K OHM 1/8W	R903N8473J
R712	-----	RC	6.8K OHM 1/8W	R903N8682J
R714	-----	RC	27K OHM 1/8W	R903N8273J
R716	-----	RC	3.3K OHM 1/8W	R903N8332J
R717	-----	RC	2.2M OHM 1/10W	R801R7225J
R718	-----	RC	1K OHM 1/8W	R903N8102J
R719	-----	RC	390 OHM 1/8W	R903N8391J
R720	-----	RC	6.8K OHM 1/8W	R903N8682J
R1001	-----	RC	2.2K OHM 1/10W	R904N7222J
R1002	-----	RC	2.2K OHM 1/10W	R904N7222J
R1003	-----	RC	2.2K OHM 1/16W	R803R9222J
R1005	-----	RC	10K OHM 1/10W	R904N7103J
R1006	-----	RC	100 OHM 1/10W	R904N7101J
R1009	-----	RC	100 OHM 1/16W	R803R9101J
R1010	-----	RC	100 OHM 1/10W	R904N7101J
R1011	-----	RC	100 OHM 1/10W	R904N7101J
R1012	-----	RC	2.2K OHM 1/10W	R904N7222J
R1013	-----	RC	10K OHM 1/16W	R803R9103J
R1014	-----	RC	4.7K OHM 1/16W	R803R9472J
R1015	-----	RC	10K OHM 1/10W	R904N7103J
R1016	-----	RC	4.7K OHM 1/10W	R904N7472J
R1017	-----	RC	10K OHM 1/10W	R904N7103J
R1018	-----	RC	10K OHM 1/10W	R904N7103J
R1021	-----	RC	4.7K OHM 1/10W	R904N7472J
R1022	-----	RC	10K OHM 1/10W	R904N7103J
R1024	-----	RC	4.7K OHM 1/16W	R803R9472J
R1025	-----	RC	4.7K OHM 1/16W	R803R9472J
R1026	-----	RC	100 OHM 1/16W	R803R9101J
R1027	-----	RC	100 OHM 1/16W	R803R9101J
R1028	-----	RC	10K OHM 1/16W	R803R9103J
R1029	-----	RC	10K OHM 1/10W	R904N7103J
R1030	-----	RC	1K OHM 1/16W	R803R9102J
R1031	-----	RC	1K OHM 1/10W	R904N7102J
R1033	-----	RC	10K OHM 1/16W	R803R9103J
R1034	-----	RC	10K OHM 1/10W	R904N7103J
R1035	-----	RC	10K OHM 1/16W	R803R9103J
R1036	-----	RC	10K OHM 1/10W	R904N7103J
R1037	-----	RC	10K OHM 1/16W	R803R9103J
R1038	-----	RC	1K OHM 1/10W	R904N7102J
R1039	-----	RC	1K OHM 1/10W	R904N7102J
R1040	-----	RC	1K OHM 1/10W	R904N7102J
R1041	-----	RC	1K OHM 1/10W	R904N7102J
R1042	-----	RC	1K OHM 1/16W	R803R9102J
R1044	-----	RC	2.2K OHM 1/10W	R904N7222J
R1047	-----	RC	10K OHM 1/10W	R904N7103J
R1049	-----	RC	100 OHM 1/16W	R803R9101J
R1050	-----	RC	100 OHM 1/10W	R904N7101J
R1058	-----	RC	100 OHM 1/16W	R803R9101J
R1060	-----	RC	100 OHM 1/10W	R904N7101J
R1095	-----	RC	22K OHM 1/10W	R904N7223J
R1099	-----	RC	4.7K OHM 1/16W	R803R9472J
R1701	-----	RC	220 OHM 1/4W	R002T4221J
R1702	-----	RC	10K OHM 1/4W	R002T4103J
R1703	-----	RC	220 OHM 1/2W	R002T2221J
R1706	-----	RC	3.9K OHM 1/4W	R002T4392J

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.		PART NAME	DESCRIPTION
			RESISTORS	
R1708	-----	RC	2.2K OHM 1/8W	R903N8222J
R1709	-----	RC	100 OHM 1/4W	R002T4101J
R1710	-----	RC	39 OHM 1/8W	R903N8390J
R1711	-----	RC	820 OHM 1/10W	R801R7821F
R1713	-----	RC	1.2K OHM 1/10W	R801R7122F
R1714	-----	RC	390 OHM 1/4W	R002T4391J
R1715	-----	RC	150 OHM 1/4W	R002T4151J
R1716	-----	RC	2.2K OHM 1/4W	R002T4222J
R1718	-----	RC	1K OHM 1/4W	R00204102J
R1720	-----	RC	1K OHM 1/4W	R002T4102J
R2001	-----	RC	3.3K OHM 1/10W	R904N7332J
R2002	-----	RC	22K OHM 1/16W	R803R9223J
R2004	-----	RC	10K OHM 1/16W	R803R9103J
R2005	-----	RC	47K OHM 1/10W	R904N7473J
R2006	-----	RC	1K OHM 1/10W	R904N7102J
R2008	-----	RC	100 OHM 1/10W	R904N7101J
R2009	-----	RC	47K OHM 1/10W	R904N7473J
R2010	-----	RC	10K OHM 1/16W	R803R9103J
R2011	-----	RC	22K OHM 1/10W	R904N7223J
R2012	-----	RC	10K OHM 1/10W	R904N7103J
R2013	-----	RC	10K OHM 1/10W	R904N7103J
R2014	-----	RC	10K OHM 1/16W	R803R9103J
R2015	-----	RC	3.3K OHM 1/16W	R803R9332J
R2016	-----	RC	100 OHM 1/10W	R904N7101J
R2018	-----	RC	2.2K OHM 1/16W	R803R9222J
R2019	-----	RC	10K OHM 1/16W	R803R9103J
R2020	-----	RC	4.7K OHM 1/16W	R803R9472J
R2021	-----	RC	10K OHM 1/10W	R904N7103J
R2022	-----	RC	10K OHM 1/16W	R803R9103J
R2023	-----	RC	10K OHM 1/10W	R904N7103J
R2024	-----	RC	10K OHM 1/16W	R803R9103J
R2026	-----	RC	2.2K OHM 1/16W	R803R9222J
R2027	-----	RC	22K OHM 1/16W	R803R9223F
R2028	-----	RC	1K OHM 1/16W	R803R9102J
R2029	-----	RC	33K OHM 1/16W	R803R9333F
R2030	-----	RC	2.2K OHM 1/10W	R904N7222J
R2031	-----	RC	100 OHM 1/16W	R803R9101J
R2032	-----	RC	22K OHM 1/16W	R803R9223F
R2033	-----	RC	1K OHM 1/16W	R803R9102J
R2034	-----	RC	33K OHM 1/16W	R803R9333F
R2035	-----	RC	3.3K OHM 1/10W	R904N7332J
R2036	-----	RC	330K OHM 1/16W	R803R9334J
R2037	-----	RC	33K OHM 1/10W	R904N7333J
R2038	-----	RC	18K OHM 1/16W	R803R9183J
R2039	-----	RC	10K OHM 1/16W	R803R9103J
R2042	-----	RC	1M OHM 1/10W	R904N7105J
R2044	-----	RC	10K OHM 1/16W	R803R9103J
R2045	-----	RC	10K OHM 1/10W	R904N7103J
R2046	-----	RC	470K OHM 1/16W	R803R9474J
R2047	-----	RC	4.7K OHM 1/16W	R803R9472J
R2048	-----	RC	1K OHM 1/10W	R904N7102J
R2049	-----	RC	3.3K OHM 1/16W	R803R9332J
R2050	-----	RC	4.7K OHM 1/10W	R904N7472J
R2052	-----	RC	10K OHM 1/10W	R904N7103J
R2601	-----	RC	10K OHM 1/10W	R904N7103J
R2603	-----	RC	10K OHM 1/10W	R904N7103J
R2607	-----	RC	91 OHM 1/16W	R803R9910J
R2608	-----	RC	4.7 OHM 1/16W	R803R94R7J
R2609	-----	RC	3.3 OHM 1/10W	R904N73R3J
R2610	-----	RC	91 OHM 1/16W	R803R9910J
R2611	-----	RC	3.3 OHM 1/16W	R803R93R3J
R2612	-----	RC	2.2M OHM 1/16W	R803R9225J
R2613	-----	RC	4.7 OHM 1/16W	R803R94R7J
R2614	-----	RC	4.7 OHM 1/10W	R904N74R7J
R2615	-----	RC	47K OHM 1/16W	R803R9473J
R2616	-----	RC	47K OHM 1/10W	R904N7473J
R2617	-----	RC	2.2M OHM 1/16W	R803R9225J
R2618	-----	RC	10 OHM 1/10W	R904N7100J
R2619	-----	RC	47K OHM 1/10W	R904N7473J
R2621	-----	RC	10 OHM 1/16W	R803R9100J
R2622	-----	RC	47K OHM 1/10W	R904N7473J

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.		PART NAME	DESCRIPTION
			RESISTORS	
R2623	-----	RC	47K OHM 1/16W	R803R9473J
R2624	-----	RC	5.6K OHM 1/10W	R904N7562J
R2625	-----	RC	100 OHM 1/10W	R904N7101J
R2626	-----	RC	100 OHM 1/16W	R803R9101J
R2627	-----	RC	100 OHM 1/16W	R803R9101J
R2628	-----	RC	100 OHM 1/10W	R904N7101J
R2629	-----	RC	10K OHM 1/10W	R904N7103J
R2630	-----	RC	100K OHM 1/10W	R904N7104J
R2631	-----	RC	1.5K OHM 1/16W	R803R9152J
R2632	-----	RC	820 OHM 1/16W	R803R9821J
R2633	-----	RC	2K OHM 1/16W	R803R9202F
R2634	-----	RC	2.2K OHM 1/10W	R904N7222J
R2635	-----	RC	4.7K OHM 1/10W	R904N7472J
R2636	-----	RC	4.7 OHM 1/10W	R904N74R7J
R2637	-----	RC	1K OHM 1/16W	R803R9102J
R2638	-----	RC	3.3K OHM 1/10W	R904N7332J
R2639	-----	RC	10K OHM 1/16W	R803R9103J
R2641	-----	RC	1K OHM 1/16W	R803R9102J
R2642	-----	RC	4.7K OHM 1/10W	R904N7472J
R3001	-----	RC	5.6K OHM 1/8W	R903N8562J
R3002	-----	RC	120 OHM 1/4W	R002T4121J
R3003	-----	RC	3.3K OHM 1/8W	R903N8332J
R3004	-----	RC	8.2K OHM 1/8W	R903N8822J
R3006	-----	RC	47K OHM 1/8W	R903N8473J
R3007	-----	RC	6.8K OHM 1/8W	R903N8682J
R3008	-----	RC	1K OHM 1/8W	R903N8102J
R3009	-----	RC	1M OHM 1/8W	R903N8105J
R3010	-----	RC	10K OHM 1/8W	R903N8103J
R3011	-----	RC	47K OHM 1/4W	R002T4473J
R3012	-----	RC	56K OHM 1/8W	R903N8563J
R3013	-----	RC	47K OHM 1/8W	R903N8473J
R3014	-----	RC	56K OHM 1/8W	R903N8563J
R3015	-----	RC	47K OHM 1/4W	R002T4473J
R3017	-----	RC	560 OHM 1/8W	R903N8561J
R3019	-----	RC	47K OHM 1/8W	R903N8473J
R3020	-----	RC	560 OHM 1/8W	R903N8561J
R3022	-----	RC	150K OHM 1/8W	R903N8154J
R3024	-----	RC	15K OHM 1/8W	R903N8153J
R3025	-----	RC	470 OHM 1/8W	R903N8471J
R3026	-----	RC	8.2K OHM 1/8W	R903N8822J
R3027	-----	RC	15K OHM 1/8W	R903N8153J
R3028	-----	RC	47K OHM 1/8W	R903N8473J
R3029	-----	RC	47K OHM 1/8W	R903N8473J
R3030	-----	RC	5.6K OHM 1/8W	R903N8562J
R3031	-----	RC	1M OHM 1/8W	R903N8105J
R3032	-----	RC	10K OHM 1/8W	R903N8103J
R3033	-----	RC	10K OHM 1/8W	R903N8103J
R3034	-----	RC	1M OHM 1/8W	R903N8105J
R3037	-----	RC	47K OHM 1/8W	R903N8473J
R3038	-----	RC	22K OHM 1/4W	R002T4223J
R3039	-----	RC	22K OHM 1/8W	R903N8223J
R3041	-----	RC	270 OHM 1/8W	R903N8271J
R3043	-----	RC	470K OHM 1/8W	R903N8474J
R3044	-----	RC	3.3K OHM 1/8W	R903N8332J
R3045	-----	RC	3.3K OHM 1/8W	R903N8332J
R3046	-----	RC	10K OHM 1/8W	R903N8103J
R3047	-----	RC	10K OHM 1/8W	R903N8103J
R3048	-----	RC	4.7K OHM 1/4W	R002T4472J
R3049	-----	RC	47K OHM 1/8W	R903N8473J
R3050	-----	RC	100 OHM 1/4W	R002T4101J
R3051	-----	RC	18K OHM 1/8W	R903N8183J
R3053	-----	RC	470K OHM 1/8W	R903N8474J
R3054	-----	RC	4.7K OHM 1/4W	R002T4472J
R3055	-----	RC	22K OHM 1/4W	R002T4223J
R3056	-----	RC	1K OHM 1/4W	R002T4102J
R3057	-----	RC	22K OHM 1/8W	R903N8223J
R3062	-----	RC	1K OHM 1/8W	R903N8102J
R3063	-----	RC	1K OHM 1/8W	R903N8102J
R3083	-----	RC	33K OHM 1/8W	R903N8333J
R3087	-----	RC	33K OHM 1/8W	R903N8333J
R4001	-----	RC	100 OHM 1/10W	R904N7101J

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.		PART NAME	DESCRIPTION
			RESISTORS	
R4002	-----	RC	10K OHM 1/10W	R904N7103J
R4003	-----	RC	100 OHM 1/16W	R803R9101J
R4004	-----	RC	100 OHM 1/16W	R803R9101J
R4005	-----	RC	100 OHM 1/16W	R803R9101J
R4006	-----	RC	10K OHM 1/10W	R904N7103J
R4007	-----	RC	1K OHM 1/10W	R904N7102J
R4010	-----	RC	4.7K OHM 1/16W	R803R9472J
R4011	-----	RC	1.2K OHM 1/16W	R803R9122F
R4012	-----	RC	22K OHM 1/16W	R803R9223F
R4013	-----	RC	1.2K OHM 1/16W	R803R9122F
R4015	-----	RC	47K OHM 1/16W	R803R9473J
R4016	-----	RC	10K OHM 1/10W	R904N7103J
R4017	-----	RC	10K OHM 1/16W	R803R9103J
R4018	-----	RC	10K OHM 1/10W	R904N7103J
R4019	-----	RC	10K OHM 1/16W	R803R9103J
R4020	-----	RC	10K OHM 1/10W	R904N7103J
R4021	-----	RC	10K OHM 1/16W	R803R9103J
R4022	-----	RC	10K OHM 1/10W	R904N7103J
R4023	-----	RC	10K OHM 1/16W	R803R9103J
R4024	-----	RC	10K OHM 1/10W	R904N7103J
R4025	-----	RC	10K OHM 1/16W	R803R9103J
R4026	-----	RC	10K OHM 1/10W	R904N7103J
R4027	-----	RC	10K OHM 1/16W	R803R9103J
R4028	-----	RC	10K OHM 1/10W	R904N7103J
R4029	-----	RC	10K OHM 1/16W	R803R9103J
R4030	-----	RC	10K OHM 1/10W	R904N7103J
R4031	-----	RC	10K OHM 1/16W	R803R9103J
R4034	-----	RC	10K OHM 1/16W	R803R9103J
R8001	-----	RC	75 OHM 1/10W	R801R7750J
R8002	-----	RC	2.2 OHM 1/8W	R903N82R2J
R8003	-----	RC	68 OHM 1/8W	R903N8680J
R8004	-----	RC	120 OHM 1/8W	R903N8121J
R8005	-----	RC	10 OHM 1/8W	R903N8100J
R8006	-----	RC	10 OHM 1/8W	R903N8100J
R8007	-----	RC	100 OHM 1/8W	R903N8101J
R8008	-----	RC	15 OHM 1/8W	R903N8150J
R8009	-----	RC	470 OHM 1/2W	R002T2471J
R8010	-----	RC	75 OHM 1/8W	R903N8750J
R8011	-----	RC	100 OHM 1/8W	R903N8101J
R8014	-----	RC	390 OHM 1/8W	R903N8391J
R8015	-----	RC	390 OHM 1/4W	R002T4391J
R8016	-----	RC	2.2K OHM 1/8W	R903N8222J
R8017	-----	RC	2.2K OHM 1/8W	R903N8222J
R8018	-----	RC	5.6K OHM 1/8W	R903N8562J
R8020	-----	RC	4.7K OHM 1/8W	R903N8472J
R8021	-----	RC	4.7K OHM 1/8W	R903N8472J
R8022	-----	RC	10 OHM 1/4W	R002T4100J
R8023	-----	RC	10K OHM 1/8W	R903N8103J
R8024	-----	RC	100K OHM 1/4W	R002T4104J
R8025	-----	RC	100K OHM 1/8W	R903N8104J
R8026	-----	RC	10K OHM 1/8W	R903N8103J
R8027	-----	RC	1K OHM 1/8W	R903N8102J
R8028	-----	RC	2.2 OHM 1/8W	R903N82R2J
R8029	-----	RC	2.2 OHM 1/8W	R903N82R2J
R8030	-----	RC	2.2 OHM 1/8W	R903N82R2J
R8032	-----	RC	82K OHM 1/4W	R002T4823J
R8034	-----	RC	82K OHM 1/8W	R903N8823J
R8035	-----	RC	82K OHM 1/8W	R903N8823J
R8037	-----	RC	82K OHM 1/8W	R903N8823J
R8038	-----	RC	560 OHM 1/8W	R903N8561J
R8040	-----	RC	560 OHM 1/8W	R903N8561J
R8043	-----	RC	82K OHM 1/8W	R903N8823J
R8045	-----	RC	1K OHM 1/8W	R903N8102J
R8046	-----	RC	1K OHM 1/8W	R903N8102J
R8047	-----	RC	1K OHM 1/8W	R903N8102J
R8048	-----	RC	10K OHM 1/8W	R903N8103J
R8049	-----	RC	10K OHM 1/8W	R903N8103J
R8050	-----	RC	12K OHM 1/8W	R903N8123J
R8051	-----	RC	12K OHM 1/8W	R903N8123J
R8052	-----	RC	8.2K OHM 1/8W	R903N8822J
R8053	-----	RC	2.7K OHM 1/8W	R903N8272J

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME		DESCRIPTION
		RESISTORS		
R8054	-----	RC	8.2K OHM 1/8W	R903N8822J
R8055	-----	RC	82K OHM 1/8W	R903N8823J
R8056	-----	RC	2.7K OHM 1/8W	R903N8272J
R8059	-----	RC	470 OHM 1/4W	R002T4471J
R8060	-----	RC	470 OHM 1/4W	R002T4471J
R8061	-----	RC	1K OHM 1/4W	R002T4102J
R8065	-----	RC	470 OHM 1/8W	R903N8471J
R8067	-----	RC	470 OHM 1/8W	R903N8471J
R8069	-----	RC	4.7K OHM 1/8W	R903N8472J
R8072	-----	RC	47 OHM 1/8W	R903N8470J
R8073	-----	RC	47 OHM 1/8W	R903N8470J
R8082	-----	RC	3.3K OHM 1/8W	R903N8332J
R8501	-----	RC	75 OHM 1/16W	R803R9750F
R8502	-----	RC	75 OHM 1/16W	R803R9750F
R8503	-----	RC	2.2K OHM 1/16W	R803R9222J
R8504	-----	RC	75 OHM 1/16W	R803R9750F
R8505	-----	RC	2.2K OHM 1/16W	R803R9222J
R8506	-----	RC	2.2K OHM 1/16W	R803R9222J
R8507	-----	RC	75 OHM 1/16W	R803R9750F
R8508	-----	RC	150 OHM 1/10W	R904N7151J
R8509	-----	RC	2.2K OHM 1/16W	R803R9222J
R8510	-----	RC	75 OHM 1/16W	R803R9750F
R8511	-----	RC	10K OHM 1/10W	R904N7103J
R8512	-----	RC	220 OHM 1/10W	R904N7221J
R8513	-----	RC	100 OHM 1/10W	R904N7101J
R8514	-----	RC	10K OHM 1/10W	R904N7103J
R8515	-----	RC	100 OHM 1/10W	R904N7101J
R8516	-----	RC	100 OHM 1/10W	R904N7101J
R8517	-----	RC	4.7K OHM 1/16W	R803R9472J
R8518	-----	RC	10K OHM 1/16W	R803R9103J
R8519	-----	RC	10K OHM 1/16W	R803R9103J
R8520	-----	RC	680 OHM 1/10W	R904N7681J
R8521	-----	RC	680 OHM 1/10W	R904N7681J
R8522	-----	RC	75 OHM 1/16W	R803R9750F
R8523	-----	RC	75 OHM 1/16W	R803R9750F
R8524	-----	RC	680 OHM 1/10W	R904N7681J
R8525	-----	RC	5.1K OHM 1/16W	R833R9512D
R8526	-----	RC	5.1K OHM 1/16W	R833R9512D
R8527	-----	RC	10K OHM 1/16W	R803R9103J
R8528	-----	RC	10K OHM 1/10W	R904N7103J
R8529	-----	RC	10K OHM 1/10W	R904N7103J
R8530	-----	RC	10K OHM 1/16W	R803R9103J
R8531	-----	RC	5.1K OHM 1/16W	R833R9512D
R8532	-----	RC	5.1K OHM 1/16W	R833R9512D
R8540	-----	RC	75 OHM 1/16W	R803R9750F
R8541	-----	RC	75 OHM 1/16W	R803R9750F
R8542	-----	RC	75 OHM 1/16W	R803R9750F
R8544	-----	RC	100 OHM 1/16W	R803R9101J
R8545	-----	RC	100 OHM 1/16W	R803R9101J
R8546	-----	RC	100 OHM 1/10W	R904N7101J
R8548	-----	RC	100 OHM 1/10W	R904N7101J
		CAPACITORS		
C101	-----	CMP	0.022 UF 100V MKT	P235W1223J
C103	-----	CE	22 UF 6.3V	E50HU0220M
C104	-----	CE	220 UF 6.3V	E02LU0221M
C105	-----	CE	22 UF 6.3V	E50HU0220M
C106	-----	CC	0.01 UF 50V B	CS0RB0414K
C107	-----	CC	0.015 UF 50V B	CS0RB04E4K
C109	-----	CC	0.1 UF 25V B	CS0RB0315K
C110	-----	CE	47 UF 16V	E02LU2470M
C112	-----	CE	220 UF 6.3V	E02LU0221M
C114	-----	CC	0.1 UF 25V B	CS0RB0315K
C115	-----	CE	33 UF 25V	E02LU3330M
C116	-----	CC	0.1 UF 50V F	CS0RF0415Z
C118	-----	CC	0.01 UF 50V B	CS0RB0414K
C119	-----	CE	10 UF 50V	E02LU5100M
C120	-----	CE	1 UF 50V	E50HU5010M
C121	-----	CC	0.0027UF 50V B	CS0RB04K3K
C122	-----	CC	0.0012UF 50V B	CS0RB04B3K
C123	-----	CE	4.7 UF 50V	E02LU54R7M
C124	-----	CE	1 UF 50V	E02LU5010M

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME	DESCRIPTION
		CAPACITORS	
C127	-----	CC	150 PF 50V CH	CS0RCH4E2J
C128	-----	CC	39 PF 50V CH	CS0RCH4N1J
C129	-----	CC	22 PF 50V CH	CS0RCH4H1J
C130	-----	CC	0.1 UF 25V B	CS0RB0315K
C131	-----	CE	100 UF 6.3V	E02LU0101M
C132	-----	CE	1 UF 50V	E02LU5010M
C133	-----	CE	1 UF 50V	E02LU5010M
C134	-----	CE	1 UF 50V	E02LU5010M
C135	-----	CE	0.22 UF 50V	E02LU5R22M
C136	-----	CE	22 UF 35V	E02LU4220M
C137	-----	CE	1 UF 50V	E02LU5010M
C138	-----	CE	1 UF 50V	E02LU5010M
C139	-----	CC	0.1 UF 50V F	CS0RF0415Z
C140	-----	CE	4.7 UF 50V	E50HU54R7M
C141	-----	CC	0.01 UF 50V B	CS0RB0414K
C142	-----	CE	47 UF 16V	E02LU2470M
C143	-----	CC	0.1 UF 50V F	CS0RF0415Z
C144	-----	CC	0.01 UF 50V B	CS0RB0414K
C145	-----	CC	0.022 UF 50V B	CS0RB04H4K
C146	-----	CE	1 UF 50V	E50HU5010M
C147	-----	CC	0.022 UF 50V B	CS0RB04H4K
C148	-----	CE	1 UF 50V	E50HU5010M
C151	-----	CE	1 UF 50V	E50HU5010M
C152	-----	CE	47 UF 16V	E02LU2470M
C154	-----	CC	0.1 UF 25V B	CS0RB0315K
C155	-----	CC	0.1 UF 25V B	CS0RB0315K
C156	-----	CC	0.1 UF 50V F	CS0RF0415Z
C158	-----	CC	0.1 UF 25V B	CS0RB0315K
C162	-----	CC	0.1 UF 25V B	CS0RB0315K
C163	-----	CE	47 UF 6.3V	E50HU0470M
C165	-----	CC	0.047 UF 50V F	CS0RF04Q4Z
C166	-----	CC	0.068 UF 50V B	CS0RB04U4K
C169	-----	CC	0.047 UF 50V F	CS0RF04Q4Z
C172	-----	CC	22 PF 50V CH	CS0RCH4H1J
C303	-----	CC	0.1 UF 50V F	CS0RF0415Z
C304	-----	CC	0.01 UF 50V F	CS0RF0414Z
C308	-----	CE	220 UF 6.3V	E02LU0221M
C309	-----	CE	220 UF 6.3V	E02LU0221M
C313	-----	CE	10 UF 16V	E50HU2100M
C316	-----	CC	0.1 UF 50V F	CS0RF0415Z
⚠C501	79099006	CE	2200 UF 25V	E02L03222M
⚠C502	79099007	CMP	0.1 UF 275V PHE840	P2472B104M
⚠C505	79099008	CE	220 UF 16V	E02LU2221M
⚠C507	79099009	CC	0.001 UF 500V B	C0JTB0513K
C508	-----	CP	0.0082UF 50V	P1S3T0822J
C509	-----	CP	0.018 UF 50V	P1S3T0183J
C510	-----	CE	470 UF 25V	E02LT3471M
⚠C511	79099010	CE	220 UF 200V	E62NFC221M
C513	-----	CC	220 PF 500V B	C0JTB05H2K
C514	-----	CE	330 UF 10V	E02LU1331M
C515	-----	CC	0.01 UF 500V E	C0JFE0514M
⚠C516	AD301391	CC	0.0047UF 250V	CD39E0MQ3M
C517	-----	CE	1000 UF 6.3V	E02LT0102M
⚠C518	79099012	CE	3300 UF 10V	E02LF1332M
⚠C519	AD301021	CE	2200 UF 6.3V	E02LF0222M
C520	-----	CC	0.1 UF 50V F	CQGTF0415Z
C521	-----	CE	10 UF 50V	E02LU5100M
⚠C522	79099014	CE	4.7 UF 50V	E02LU54R7M
C523	-----	CE	330 UF 10V	E02LU1331M
C524	-----	CC	0.1 UF 50V B	CQGTB0415K
C525	-----	CC	680 PF 2KV R	C03L0R7U2K
C527	-----	CE	100 UF 16V	E02LU2101M
C528	-----	CE	100 UF 16V	E02LU2101M
C530	-----	CE	220 UF 6.3V	E02LU0221M
C604	-----	CC	0.001 UF 50V B	CHGTB0413K
C607	-----	CC	0.1 UF 50V F	CQGTF0415Z
C608	-----	CE	100 UF 6.3V	E50HU0101M
C609	-----	CC	0.1 UF 50V F	CQGTF0415Z
C613	-----	CE	100 UF 6.3V	E50HU0101M
C616	-----	CE	10 UF 16V	E50HU2100M
C653	-----	CE	47 UF 35V	E02LU4470M

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME		DESCRIPTION
		CAPACITORS		
C701	-----	CC	0.022 UF 50V B	CS0RB04H4K
C702	-----	CE	3.3 UF 50V	E02LU53R3M
C703	-----	CE	10 UF 50V	E02LU5100M
C704	-----	CE	10 UF 50V	E02LU5100M
C705	-----	CE	10 UF 50V	E02LU5100M
C706	-----	CE	10 UF 50V	E02LU5100M
C707	-----	CC	0.1 UF 25V B	CS0RB0315K
C708	-----	CE	10 UF 50V	E50HU5100M
C709	-----	CE	10 UF 50V	E02LU5100M
C710	-----	CC	0.0012UF 50V B	CS0RB04B3K
C711	-----	CE	10 UF 50V	E02LU5100M
C712	-----	CE	10 UF 50V	E02LU5100M
C713	-----	CE	10 UF 16V	E50HU2100M
C714	-----	CE	10 UF 50V	E02LU5100M
C715	-----	CC	0.0012UF 50V B	CS0RB04B3K
C716	-----	CE	1 UF 50V	E50HU5010M
C717	-----	CC	0.0012UF 50V B	CS0RB04B3K
C718	-----	CE	10 UF 50V	E02LU5100M
C719	-----	CE	10 UF 50V	E02LU5100M
C720	-----	CE	33 UF 6.3V	E50HU0330M
C721	-----	CC	0.0012UF 50V B	CS0RB04B3K
C722	-----	CC	0.1 UF 25V B	CS0RB0315K
C723	-----	CC	0.01 UF 50V F	CS0RF0414Z
C724	-----	CC	0.01 UF 50V F	CS0RF0414Z
C725	-----	CC	0.1 UF 25V B	CS0RB0315K
C726	-----	CC	0.015 UF 50V B	CS0RB04E4K
C727	-----	CE	10 UF 50V	E02LU5100M
C728	-----	CE	10 UF 16V	E50HU2100M
C729	-----	CC	0.01 UF 50V B	CS0RB0414K
C730	-----	CC	0.015 UF 50V B	CS0RB04E4K
C731	-----	CE	0.22 UF 50V	E02LU5R22M
C732	-----	CC	0.01 UF 50V F	CS0RF0414Z
C734	-----	CC	0.1 UF 25V B	CS0RB0315K
C735	-----	CE	4.7 UF 50V	E02LU54R7M
C736	-----	CC	0.001 UF 50V B	CS0RB0413K
C737	-----	CE	4.7 UF 50V	E50HU54R7M
C738	-----	CC	0.01 UF 50V F	CS0RF0414Z
C739	-----	CE	47 UF 6.3V	E50HU0470M
C740	-----	CE	33 UF 6.3V	E50HU0330M
C741	-----	CE	10 UF 50V	E02LU5100M
C742	-----	CE	10 UF 50V	E02LU5100M
C743	-----	CE	0.22 UF 50V	E02LU5R22M
C744	-----	CC	0.1 UF 50V F	CS0RF0415Z
C746	-----	CC	0.1 UF 25V B	CS0RB0315K
C747	-----	CE	10 UF 50V	E02LU5100M
C748	-----	CC	0.1 UF 50V F	CS0RF0415Z
C749	-----	CC	0.1 UF 50V F	CS0RF0415Z
C750	-----	CE	2.2 UF 50V	E02LU52R2M
C751	-----	CC	0.1 UF 50V F	CS0RF0415Z
C754	-----	CE	47 UF 16V	E02LU2470M
C755	-----	CC	0.022 UF 50V B	CS0RB04H4K
C756	-----	CE	10 UF 50V	E02LU5100M
C757	-----	CE	10 UF 50V	E02LU5100M
C759	-----	CE	22 UF 35V	E02LU4220M
C760	-----	CE	1 UF 50V	E50HU5010M
C761	-----	CE	47 UF 6.3V	E50HU0470M
C762	-----	CC	680 PF 50V CH	CS0RCH4U2J
C763	-----	CC	680 PF 50V CH	CS0RCH4U2J
C1003	-----	CC	0.1 UF 25V F	CS0PF0315Z
C1007	-----	CC	0.1 UF 25V F	CS0PF0315Z
C1009	-----	CC	0.001 UF 50V B	CS0YB0413K
C1010	-----	CC	0.001 UF 50V B	CS0PB0413K
C1011	-----	CC	4 PF 50V CH	CS0PCH440C
C1012	-----	CC	4 PF 50V CH	CS0PCH440C
C1013	-----	CC	0.1 UF 25V F	CS0YF0315Z
C1018	-----	CC	0.1 UF 25V F	CS0PF0315Z
C1019	-----	CC	0.0022UF 50V B	CS0YB04H3K
C1020	-----	CE	100 UF 16 V	E50HU2101M
C1021	-----	CC	0.1 UF 25V F	CS0YF0315Z
C1022	-----	CE	100 UF 16 V	E50HU2101M
C1025	-----	CE	100 UF 16 V	E50HU2101M

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.		PART NAME	DESCRIPTION
			CAPACITORS	
C1027	-----	CE	100 UF 16 V	E50HU2101M
C1028	-----	CC	0.1 UF 25V F	CS0YF0315Z
C1029	-----	CE	100 UF 16 V	E50HU2101M
C1030	-----	CC	0.1 UF 25V F	CS0YF0315Z
C1702	-----	CE	1 UF 50V	E02LU5010M
C1703	-----	CE	10 UF 50V	E02LU5100M
C1706	-----	CE	22 UF 35V	E02LU4220M
C1708	-----	CE	470 UF 6.3V	E02LU0471M
C1709	-----	CE	10 UF 16V	E50HU2100M
C1713	-----	CE	470 UF 6.3V	E02LU0471M
C2001	-----	CC	330 PF 50V CH	CS0YCH4L2J
C2002	-----	CC	0.001 UF 50V B	CS0YB0413K
C2003	-----	CC	0.022 UF 50V B	CS0PB04H4K
C2004	-----	CC	0.001 UF 50V B	CS0YB0413K
C2005	-----	CC	0.001 UF 50V B	CS0PB0413K
C2006	-----	CC	0.001 UF 50V B	CS0YB0413K
C2007	-----	CC	2.2 UF 16V F	CS0RF02H6Z
C2008	-----	CC	0.1 UF 16V B	CS0PB0215K
C2010	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2011	-----	CC	1 UF 25V F	CS0RF0316Z
C2014	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2015	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2018	-----	CC	2.2 UF 16V F	CS0RF02H6Z
C2019	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2020	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2021	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2023	-----	CC	0.1 UF 16V B	CS0YB0215K
C2024	-----	CC	100 PF 50V CH	CS0YCH412J
C2025	-----	CC	0.015 UF 50V B	CS0YB04E4K
C2026	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2027	-----	CC	2.2 UF 16V F	CS0RF02H6Z
C2028	-----	CC	0.1 UF 16V B	CS0YB0215K
C2029	-----	CC	0.1 UF 16V B	CS0PB0215K
C2030	-----	CC	0.01 UF 50V B	CS0PB0414K
C2031	-----	CC	150 PF 50V CH	CS0YCH4E2J
C2035	-----	CC	100 PF 50V CH	CS0YCH412J
C2036	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2037	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2038	-----	CC	0.015 UF 50V B	CS0YB04E4K
C2039	-----	CC	0.001 UF 50V B	CS0YB0413K
C2040	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2041	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2042	-----	CC	1 UF 25V F	CS0RF0316Z
C2044	-----	CC	1 UF 25V F	CS0RF0316Z
C2045	-----	CE	100 UF 16 V	E50HU2101M
C2046	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2047	-----	CC	1 UF 25V F	CS0RF0316Z
C2048	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2049	-----	CC	10 PF 50V CH	CS0YCH411D
C2050	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2051	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2060	-----	CC	0.1 UF 16V B	CS0PB0215K
C2601	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2602	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2603	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2604	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2605	-----	CC	2.2 UF 16V F	CS0RF02H6Z
C2606	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2607	-----	CC	2.2 UF 16V F	CS0RF02H6Z
C2608	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2609	-----	CC	1 UF 25V F	CS0RF0316Z
C2610	-----	CC	1 UF 25V F	CS0RF0316Z
C2611	-----	CC	2.2 UF 16V F	CS0RF02H6Z
C2612	-----	CC	0.1 UF 25V F	CS0PF0315Z
C2613	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2614	-----	CC	2.2 UF 16V F	CS0RF02H6Z
C2615	-----	CE	100 UF 16 V	E50HU2101M
C2616	-----	CC	2.2 UF 16V F	CS0RF02H6Z
C2617	-----	CC	2.2 UF 16V F	CS0RF02H6Z
C2618	-----	CC	0.001 UF 50V B	CS0PB0413K
C2619	-----	CC	2.2 UF 16V F	CS0RF02H6Z

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME	DESCRIPTION
		CAPACITORS	
C2620	-----	CC	1 UF 25V F	CS0RF0316Z
C2621	-----	CC	1 UF 25V F	CS0RF0316Z
C2622	-----	CC	0.001 UF 50V B	CS0YB0413K
C2623	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2624	-----	CE	100 UF 16 V	E50HU2101M
C2625	-----	CC	0.001 UF 50V B	CS0PB0413K
C2626	-----	CC	0.1 UF 16V B	CS0YB0215K
C2628	-----	CC	0.1 UF 16V B	CS0YB0215K
C2629	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2630	-----	CC	0.001 UF 50V B	CS0YB0413K
C2631	-----	CC	0.001 UF 50V B	CS0PB0413K
C2632	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2633	-----	CC	220 PF 50V CH	CS0PCH4H2J
C2634	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2635	-----	CC	0.0022UF 50V B	CS0PB04H3K
C2638	-----	CC	0.1 UF 25V F	CS0YF0315Z
C2639	-----	CE	100 UF 16 V	E50HU2101M
C2640	-----	CC	0.022 UF 50V B	CS0PB04H4K
C3001	-----	CC	1 UF 16V B	CS0RB0216K
C3003	-----	CE	10 UF 16V	E50HU2100M
C3004	-----	CC	0.022 UF 50V B	CS0RB04H4K
C3007	-----	CC	0.1 UF 25V B	CS0RB0315K
C3008	-----	CC	0.0047UF 50V B	CS0RB04Q3K
C3009	-----	CC	0.1 UF 25V B	CS0RB0315K
C3010	-----	CC	0.001 UF 50V B	CS0RB0413K
C3013	-----	CE	22 UF 6.3V	E50HU0220M
C3014	-----	CC	0.1 UF 50V F	CS0RF0415Z
C3015	-----	CC	820 PF 50V CH	CS0RCH4W2J
C3016	-----	CE	47 UF 6.3V	E50HU0470M
C3017	-----	CC	12 PF 50V CH	CS0KCH4B1J
C3018	-----	CC	150 PF 50V CH	CS0RCH4E2J
C3019	-----	CC	0.1 UF 25V B	CS0RB0315K
C3020	-----	CC	0.022 UF 50V B	CS0RB04H4K
C3021	-----	CE	10 UF 16V	E50HU2100M
C3022	-----	CC	470 PF 50V CH	CS0RCH4Q2J
C3023	-----	CE	220 UF 6.3V	E02LU0221M
C3024	-----	CC	18 PF 50V CH	CS0KCH4G1J
C3025	-----	CC	18 PF 50V CH	CS0KCH4G1J
C3027	-----	CC	0.1 UF 50V F	CS0RF0415Z
C3029	-----	CE	47 UF 6.3V	E50HU0470M
C3030	-----	CC	0.1 UF 50V F	CS0RF0415Z
C3031	-----	CC	0.0015UF 50V B	CS0RB04E3K
C3032	-----	CE	2.2 UF 50V	E50HU52R2M
C3033	-----	CE	330 UF 35V	E02LT4331M
C3034	-----	CC	1 UF 25V F	CS0RF0316Z
C3036	-----	CC	0.1 UF 50V F	CS0RF0415Z
C3038	-----	CC	1 UF 16V B	CS0RB0216K
C3039	-----	CC	12 PF 50V CH	CS0KCH4B1J
C3041	-----	CC	0.0015UF 50V B	CQGTB04E3K
C3044	-----	CC	12 PF 50V CH	CS0KCH4B1J
C3045	-----	CE	0.47 UF 50V	E50HU5R47M
C3046	-----	CC	15 PF 50V CH	CS0KCH4E1J
C3047	-----	CC	15 PF 50V CH	CS0KCH4E1J
C3049	-----	CC	100 PF 50V CH	CS0RCH412J
C3050	-----	CC	0.01 UF 50V B	CS0RB0414K
C3052	-----	CE	22 UF 6.3V	E50HU0220M
C3053	-----	CC	0.1 UF 25V B	CS0RB0315K
C3061	-----	CC	0.1 UF 50V F	CS0RF0415Z
C3062	-----	CC	0.1 UF 50V F	CHGTF0415Z
C3065	-----	CC	0.1 UF 50V F	CS0RF0415Z
C4003	-----	CC	2.2 UF 16V F	CS0RF02H6Z
C4004	-----	CE	100 UF 16 V	E50HU2101M
C4005	-----	CC	0.1 UF 25V F	CS0YF0315Z
C4006	-----	CC	0.1 UF 25V F	CS0YF0315Z
C4007	-----	CE	100 UF 16 V	E50HU2101M
C4008	-----	CC	0.1 UF 25V F	CS0PF0315Z
C4010	-----	CC	0.1 UF 25V F	CS0PF0315Z
C4012	-----	CC	0.1 UF 25V F	CS0PF0315Z
C4020	-----	CC	0.1 UF 25V F	CS0YF0315Z
C4029	-----	CE	1000 UF 10V	E02LT1102M
C4031	-----	CC	0.1 UF 25V F	CS0YF0315Z

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME	DESCRIPTION
		CAPACITORS	
C4033	-----	CC	0.1 UF 25V F	CS0PF0315Z
C4037	-----	CC	0.1 UF 25V F	CS0YF0315Z
C4038	-----	CE	100 UF 16 V	E50HU2101M
C4041	-----	CC	0.1 UF 25V F	CS0YF0315Z
C4044	-----	CC	0.1 UF 25V F	CS0PF0315Z
C4045	-----	CC	0.1 UF 25V F	CS0YF0315Z
C4048	-----	CC	220 PF 50V CH	CS0PCH4H2J
C8003	-----	CE	10 UF 16V	E50HU2100M
C8008	-----	CC	100 PF 50V CH	CS0RCH412J
C8009	-----	CE	470 UF 6.3V	E02LU0471M
C8010	-----	CC	0.1 UF 25V B	CS0RB0315K
C8011	-----	CC	100 PF 50V CH	CS0RCH412J
C8012	-----	CC	0.1 UF 25V B	CS0RB0315K
C8013	-----	CE	10 UF 50V	E02LU5100M
C8015	-----	CE	470 UF 6.3V	E02LU0471M
C8020	-----	CE	10 UF 16V	E50HU2100M
C8021	-----	CE	10 UF 16V	E50HU2100M
C8022	-----	CE	2.2 UF 50V	E62KU52R2M
C8023	-----	CE	2.2 UF 50V	E62KU52R2M
C8024	-----	CE	10 UF 16V	E50HU2100M
C8025	-----	CC	820 PF 50V CH	CS0RCH4W2J
C8026	-----	CE	47 UF 16V	E02LU2470M
C8027	-----	CC	0.01 UF 50V B	CS0RB0414K
C8028	-----	CE	10 UF 16V	E50HU2100M
C8029	-----	CE	10 UF 16V	E50HU2100M
C8030	-----	CE	10 UF 16V	E50HU2100M
C8031	-----	CE	4.7 UF 50 V	E00NU54R7M
C8032	-----	CE	4.7 UF 50V	E50HU54R7M
C8033	-----	CE	10 UF 16V	E50HU2100M
C8037	-----	CE	470 UF 6.3V	E02LU0471M
C8038	-----	CE	470 UF 6.3V	E02LU0471M
C8039	-----	CE	470 UF 6.3V	E02LU0471M
C8040	-----	CE	4.7 UF 50V	E50HU54R7M
C8041	-----	CC	0.1 UF 50V F	CS0RF0415Z
C8042	-----	CE	10 UF 16V	E50HU2100M
C8043	-----	CE	10 UF 16V	E50HU2100M
C8048	-----	CE	470 UF 6.3V	E02LU0471M
C8049	-----	CE	100 UF 16V	E02LU2101M
C8052	-----	CE	4.7 UF 50V	E50HU54R7M
C8053	-----	CC	0.01 UF 50V B	CS0RB0414K
C8054	-----	CE	220 UF 16V	E02LU2221M
C8055	-----	CC	0.01 UF 50V B	CS0RB0414K
C8056	-----	CC	100 PF 50V CH	CS0RCH412J
C8057	-----	CC	100 PF 50V CH	CS0RCH412J
C8058	-----	CC	0.001 UF 50V B	CS0RB0413K
C8061	-----	CE	4.7 UF 50V	E50HU54R7M
C8062	-----	CE	4.7 UF 50V	E50HU54R7M
C8064	-----	CC	820 PF 50V CH	CS0RCH4W2J
C8065	-----	CE	33 UF 10 V	E50HU1330M
C8070	-----	CC	0.0015UF 50V B	CS0RB04E3K
C8077	-----	CC	0.0015UF 50V B	CS0RB04E3K
C8079	-----	CC	100 PF 50V CH	CS0RCH412J
C8081	-----	CC	100 PF 50V CH	CS0RCH412J
C8090	-----	CC	0.1 UF 50V F	CS0RF0415Z
C8094	-----	CE	47 UF 6.3V	E50HU0470M
C8095	-----	CC	0.022 UF 50V B	CS0RB04H4K
C8096	-----	CC	0.1 UF 50V F	CS0RF0415Z
C8097	-----	CE	47 UF 6.3V	E50HU0470M
C8098	-----	CC	0.1 UF 50V F	CS0RF0415Z
C8102	-----	CE	2.2 UF 50V	E50HU52R2M
C8103	-----	CE	470 UF 16V	E02LT2471M
C8104	-----	CE	22 UF 16 V	E50HU2220M
C8105	-----	CE	22 UF 16 V	E50HU2220M
C8106	-----	CE	2.2 UF 50V	E50HU52R2M
C8501	-----	CC	2.2 UF 16V F	CS0RF02H6Z
C8502	-----	CC	33 PF 50V CH	CS0YCH4L1J
C8503	-----	CC	33 PF 50V CH	CS0YCH4L1J
C8504	-----	CC	20 PF 50V CH	CS0PCH421J
C8505	-----	CC	0.1 UF 25V F	CS0YF0315Z
C8506	-----	CE	100 UF 16 V	E50HU2101M
C8507	-----	CE	10 UF 16V	E50HU2100M

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME		DESCRIPTION
		CAPACITORS		
C8508	-----	CE	10 UF 16V	E50HU2100M
C8509	-----	CC	0.1 UF 25V F	CS0YF0315Z
C8510	-----	CC	0.1 UF 25V F	CS0YF0315Z
C8512	-----	CE	10 UF 16V	E50HU2100M
C8513	-----	CE	10 UF 16V	E50HU2100M
C8514	-----	CC	0.1 UF 25V F	CS0YF0315Z
C8515	-----	CC	0.1 UF 25V F	CS0YF0315Z
C8516	-----	CE	100 UF 16 V	E50HU2101M
C8517	-----	CC	0.1 UF 25V F	CS0YF0315Z
C8518	-----	CE	100 UF 16 V	E50HU2101M
C8519	-----	CE	10 UF 16V	E50HU2100M
C8520	-----	CE	100 UF 16 V	E50HU2101M
C8521	-----	CE	10 UF 16V	E50HU2100M
C8522	-----	CC	0.1 UF 25V F	CS0PF0315Z
C8523	-----	CP	0.0018UF 50V	P1S3T0182J
C8524	-----	CP	0.0033UF 50V	P1S3T0332J
C8525	-----	CP	0.0018UF 50V	P1S3T0182J
C8526	-----	CP	0.0033UF 50V	P1S3T0332J
C8528	-----	CE	1000 UF 10V	E02LT1102M
C8529	-----	CC	0.1 UF 25V F	CS0YF0315Z
C8537	-----	CC	0.1 UF 25V F	CS0PF0315Z
C8539	-----	CE	100 UF 16 V	E50HU2101M
C8542	-----	CC	0.01 UF 50V B	CS0YB0414K
C8543	-----	CC	0.01 UF 50V B	CS0YB0414K
		DIODES		
⚠D502	79099015	DIODE,SILICON	RM11C-EIC	D2WTRM11C0
⚠D503	79099015	DIODE,SILICON	RM11C-EIC	D2WTRM11C0
⚠D505	79099015	DIODE,SILICON	RM11C-EIC	D2WTRM11C0
⚠D506	79099015	DIODE,SILICON	RM11C-EIC	D2WTRM11C0
⚠D507	79099016	DIODE,SILICON	SB290S	D2WXB290S0
D509	79099017	DIODE,RECTIFIER	RGP10J-EIC	D2WXGP10J0
D510	79099018	DIODE,ZENER	MTZJ30B T-77	D97U03001B
⚠D512	79099019	DIODE,SCHOTTKY	SB340L-6737	D2LKB340L0
⚠D515	79099019	DIODE,SCHOTTKY	SB340L-6737	D2LKB340L0
⚠D518	79099020	DIODE,SILICON	1SS133T-77	D1VT001330
D521	79099021	DIODE,RECTIFIER	10ELS2N-TA1B2	D28TELS2N2
⚠D522	AD300075	DIODE,RECTIFIER	10ELS6N-TA1B2	D28TELS6N6
D523	79099023	DIODE,ZENER	MTZJ33B T-77	D97U03301B
D524	79099020	DIODE,SILICON	1SS133T-77	D1VT001330
D525	79099025	DIODE,SILICON	1N4005-EIC	D2WXN40050
D526	79099028	DIODE,ZENER	MTZJ24B T-77	D97U02401B
⚠D529	79099016	DIODE,SILICON	SB290S	D2WXB290S0
D530	AD300075	DIODE,RECTIFIER	10ELS6N-TA1B2	D28TELS6N6
D531	AD300671	DIODE,ZENER	MTZJ18B T-77	D97U01801B
D532	79099021	DIODE,RECTIFIER	10ELS2N-TA1B2	D28TELS2N2
D601	79099027	DIODE,ZENER	MTZJ5.1C T-77	D97U05R11C
D604	79099029	DIODE,ZENER	MTZJ3.6B T-77	D97U03R61B
D681	79099024	LED	LTL-1CHGE-002A	0021E5Q210
D685	79099024	LED	LTL-1CHGE-002A	0021E5Q210
D701	79099020	DIODE,SILICON	1SS133T-77	D1VT001330
D1701	79099031	DIODE,ZENER	MTZJ13B T-77	D97U01301B
D1702	79099020	DIODE,SILICON	1SS133T-77	D1VT001330
D1706	79099032	DIODE,ZENER	MTZJ10B T-77	D97U01001B
D2601	79099003	DIODE,SILICON	1SS368(TPH3)	DD5R003680
D2602	79099003	DIODE,SILICON	1SS368(TPH3)	DD5R003680
D3001	79099030	INFRARED LED	LNA2702L010R	0010100320
D3007	79099033	DIODE,SILICON	1SS133T-77	D1VT001330
D3009	79099033	DIODE,SILICON	1SS133T-77	D1VT001330
D4001	79099025	DIODE,SILICON	1N4005-EIC	D2WXN40050
D8004	79099033	DIODE,SILICON	1SS133T-77	D1VT001330
D8010	79099033	DIODE,SILICON	1SS133T-77	D1VT001330
D8016	79099025	DIODE,SILICON	1N4005-EIC	D2WXN40050
D8501	79099034	DIODE,SILICON	1SS226(TE85L)	DD5R002260
D8502	79099034	DIODE,SILICON	1SS226(TE85L)	DD5R002260
		DIODES		
D8503	79099034	DIODE,SILICON	1SS226(TE85L)	DD5R002260
D8504	79099034	DIODE,SILICON	1SS226(TE85L)	DD5R002260
D8505	79099034	DIODE,SILICON	1SS226(TE85L)	DD5R002260

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME	DESCRIPTION	
		ICS		
IC101	79099035	IC	LA71205M-MPB	I03F3205M0
⚠IC501	79099036	IC	KIA431	I1KJ9A4310
⚠IC502	79099037	IC	KIA7809API	I1KA97809A
⚠IC503	79099038	PHOTO COUPLER	LTV-817M-VB	0002E00610
IC601	79099039	IC	BU2977FS	I07F529770
IC701	79099040	IC	AN3663FBP	I01F63FBP0
IC1001	79099041	IC	OEC6069A	I55K0251AF
IC1002	79099042	IC	S-24C01BFJ-TB	I5HJ001BF0
IC1005	79099043	IC	TC7S08F-TE85L	I55F07S08F
IC1006	79099044	IC	TC7W241FU-TE12L	I55F0W2410
IC2001	79099045	IC	OEC6068A	I05F094A03
IC2002	79099046	IC	MSM5416258B-30	I59J0258B3
IC2601	79099047	IC	TC7S04F(TE85L)	I55F07S04F
IC2602	79099048	IC	BA5813FM	I07FV58130
IC2603	79099049	IC	OEC6067A	I05FR1323F
IC3001	79099050	IC	OEC0119B	I54F50119B
IC3003	79099051	IC	PST3231NR	I9UF032310
IC3099	79099052	IC	S-24C02BDP-1A	A2A706A015
IC4001	79099053	IC	ZR36732	ICQF067320
IC4002	79099054	IC	S-816A25AMC-BAA-T2	I5HF96A250
IC4003	79099055	IC	MSM56V16160F-8	I59J0160FB
IC4004	79099055	IC	MSM56V16160F-8	I59J0160FB
IC4005	79099046	IC	MSM5416258B-30	I59J0258B3
IC4006	79099056	IC	MBM29F800BA-55PFTN-S	I5QJ0F8225
IC8001	79099057	IC	CD4053BNSR	I5CF040530
IC8002	79099058	IC	NJM2533V(TE2)	I0QF02533V
IC8003	79099059	IC	NJM4580M	I0QF045800
IC8004	79099059	IC	NJM4580M	I0QF045800
IC8005	79099058	IC	NJM2533V(TE2)	I0QF02533V
IC8501	79099060	IC	TC7SH08FU(TE85L)	I55F0H08F0
IC8503	79099061	IC	AD1959YRSRL	I1BF019590
IC8504	79099062	IC	MM1540AFBE	I0UFG540A0
		TRANSISTORS		
Q101	79099063	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)	TCATC31980
Q102	79099063	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)	TCATC31980
Q103	79099064	COMPOUND TRANSISTOR	KRA103SRTK	TPAAC05002
Q104	79099065	TRANSISTOR,SILICON	KTC3203_Y-AT	TCAT032034
Q105	79099066	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)	TAATA12660
Q106	79099067	TRANSISTOR,SILICON	2SA1037AKT146R,S	T6YJ1037K0
Q107	79099067	TRANSISTOR,SILICON	2SA1037AKT146R,S	T6YJ1037K0
Q109	79099068	TRANSISTOR,SILICON	2SC2412KT146 R,S	T8YJ2412K0
Q303	79099069	COMPOUND TRANSISTOR	KRC103SRTK	TNAAC05002
⚠Q501	79099070	FET	STP5NC50FP	TJXG5NC500
⚠Q502	79099071	TRANSISTOR,SILICON	2SC2120Y(TPE2)	TC5T021204
⚠Q504	79099072	TRANSISTOR,SILICON	2SB1131(S,T)-AE	TB3T011310
⚠Q505	79099073	TRANSISTOR,SILICON	KTC3209_Y-AT	TCAT03209Y
Q506	79099074	COMPOUND TRANSISTOR	KRC101MAT	TNATA03002
Q601	79099063	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)	TCATC31980
Q602	79099073	TRANSISTOR,SILICON	KTC3209_Y-AT	TCAT03209Y
Q666	79099064	COMPOUND TRANSISTOR	KRA103SRTK	TPAAC05002
Q667	79099075	COMPOUND TRANSISTOR	KRA102SRTK	TPAAB05001
Q1003	79099086	COMPOUND TRANSISTOR	DTA114EKAT146	TPYJB05001
Q1004	79099086	COMPOUND TRANSISTOR	DTA114EKAT146	TPYJB05001
⚠Q1701	79099065	TRANSISTOR,SILICON	KTC3203_Y-AT	TCAT032034
⚠Q1702	79099073	TRANSISTOR,SILICON	KTC3209_Y-AT	TCAT03209Y
⚠Q1703	79099073	TRANSISTOR,SILICON	KTC3209_Y-AT	TCAT03209Y
Q1704	79099069	COMPOUND TRANSISTOR	KRC103SRTK	TNAAC05002
⚠Q1705	79099065	TRANSISTOR,SILICON	KTC3203_Y-AT	TCAT032034
⚠Q1706	79099072	TRANSISTOR,SILICON	2SB1131(S,T)-AE	TB3T011310
Q1707	79099068	TRANSISTOR,SILICON	2SC2412KT146 R,S	T8YJ2412K0
Q1708	79099068	TRANSISTOR,SILICON	2SC2412KT146 R,S	T8YJ2412K0
⚠Q1713	79099087	TRANSISTOR,SILICON	KTA1271_Y-AT	TAAT012714
Q1714	79099069	COMPOUND TRANSISTOR	KRC103SRTK	TNAAC05002
Q2001	79099088	TRANSISTOR,SILICON	2SC3326_B(TE85L)	T85A03326B
Q2601	79099089	COMPOUND TRANSISTOR	KRC102SRTK	TNAAB05003
Q2602	79099090	COMPOUND TRANSISTOR	HN1C03F_B(TE85L)	TS5M000037
Q2603	79099091	COMPOUND TRANSISTOR	HN1B01F_Y(TE85L)	TS5M000036
Q2604	79099091	COMPOUND TRANSISTOR	HN1B01F_Y(TE85L)	TS5M000036
Q2605	79099092	TRANSISTOR,SILICON	2SA1213_Y(TE12L,C)	T65A01213Y
Q3001	79099093	PHOTO COUPLER	RPI-303	0002700690
Q3002	79099093	PHOTO COUPLER	RPI-303	0002700690

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME		DESCRIPTION
		TRANSISTORS		
Q3004	79099094	PHOTO COUPLER	RPI-352C40N	0002700680
Q3005	79099094	PHOTO COUPLER	RPI-352C40N	0002700680
Q3006	79099095	PHOTO TRANSISTOR	PNA2604M010R	0000100380
Q3007	79099069	COMPOUND TRANSISTOR	KRC103SRTK	TNAAC05002
Q3008	79099095	PHOTO TRANSISTOR	PNA2604M010R	0000100380
Q4001	79099092	TRANSISTOR,SILICON	2SA1213_Y(TE12L,C)	T65A01213Y
Q8001	79099067	TRANSISTOR,SILICON	2SA1037AKT146R,S	T6YJ1037K0
Q8002	79099068	TRANSISTOR,SILICON	2SC2412KT146 R,S	T8YJ2412K0
Q8003	79099069	COMPOUND TRANSISTOR	KRC103SRTK	TNAAC05002
Q8004	79099066	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)	TAATA12660
Q8005	79099068	TRANSISTOR,SILICON	2SC2412KT146 R,S	T8YJ2412K0
Q8006	79099068	TRANSISTOR,SILICON	2SC2412KT146 R,S	T8YJ2412K0
Q8007	79099064	COMPOUND TRANSISTOR	KRA103SRTK	TPAAC05002
Q8008	79099069	COMPOUND TRANSISTOR	KRC103SRTK	TNAAC05002
Q8011	79099096	COMPOUND TRANSISTOR	KRC104SRTK	TNAAD05001
Q8012	79099069	COMPOUND TRANSISTOR	KRC103SRTK	TNAAC05002
Q8013	79099097	COMPOUND TRANSISTOR	KRA101SRTK	TPAAA05001
Q8014	79099068	TRANSISTOR,SILICON	2SC2412KT146 R,S	T8YJ2412K0
Q8015	79099068	TRANSISTOR,SILICON	2SC2412KT146 R,S	T8YJ2412K0
Q8501	79099098	TRANSISTOR,SILICON	KTA1504S_Y_RTK	TAAA1504SY
Q8502	79099098	TRANSISTOR,SILICON	KTA1504S_Y_RTK	TAAA1504SY
Q8503	79099098	TRANSISTOR,SILICON	KTA1504S_Y_RTK	TAAA1504SY
Q8505	79099098	TRANSISTOR,SILICON	KTA1504S_Y_RTK	TAAA1504SY
Q8508	79099090	COMPOUND TRANSISTOR	HN1C03F_B(TE85L)	TS5M000037
Q8509	79099099	TRANSISTOR,SILICON	KTC3875S_Y_RTK	TCAA3875SY
Q8510	79099075	COMPOUND TRANSISTOR	KRA102SRTK	TPAAB05001
Q8511	79099075	COMPOUND TRANSISTOR	KRA102SRTK	TPAAB05001
Q8512	79099088	TRANSISTOR,SILICON	2SC3326_B(TE85L)	T85A03326B
Q8513	79099088	TRANSISTOR,SILICON	2SC3326_B(TE85L)	T85A03326B
		COILS &TRANSFORMERS		
L101	-----	COIL,BIAS OSC	1626009	031626009R
L102	-----	COIL	100 UH	02167F101J
L104	-----	COIL	22 UH	02167F220J
L105	-----	COIL	22 UH	02167F220J
L106	-----	COIL	22 UH	02167F220J
L107	-----	COIL	22 UH	02167F220J
L301	-----	COIL	100 UH	021673101K
L302	-----	COIL	22 UH	02167F220J
⚠L501	79099100	COIL,LINE FILTER	0R7A223F24	029T0000A1
L502	-----	CORE,FERRITE	W5T_20*10*10A	02AHB0A0A4
⚠L503	79099101	COIL	22 UH	02167E220K
L505	-----	COIL	22 UH	02167F220J
L506	79099101	COIL	22 UH	02167E220K
L507	79099101	COIL	22 UH	02167E220K
L701	-----	COIL	22 UH	02167F220J
L702	-----	COIL	22 UH	02167F220J
L703	-----	COIL	100 UH	0216A6101K
L704	-----	COIL	22 UH	02167F220J
L3003	-----	COIL	12 UH	021LA6120K
L4001	-----	COIL	15 UH	0216S3150K
L8001	-----	COIL	0.27 UH	021LA6R27M
L8002	-----	COIL	100 UH	0216A6101K
L8003	-----	COIL	0.27 UH	021LA6R27M
L8004	-----	COIL	47 UH	021LA6470K
L8006	-----	COIL	100 UH	021LA6101K
L8007	-----	COIL	100 UH	0216A6101K
L8008	-----	COIL	47 UH	021LA6470K
L8009	-----	COIL	1.5 UH	021LA61R5J
L8501	-----	COIL	15 UH	0216S3150K
L8507	-----	CORE,FERRITE	W5T29X7.5X19	02AHB9A972
⚠T501	79099102	TRANSFORMER,SWITCHING	8129093S	048129093S
		JACKS		
J601	79099103	RCA JACK	AV1-06DG-1	060Q401086
J602	79099103	RCA JACK	AV1-06DG-1	060Q401086
J603	79099104	RCA JACK	AV1-06DSG-1	060Q421024
J8001	79099105	RCA JACK	MSP-213V1-432 PBSN	060J411018
J8002	AD301038	RCA JACK	MSP-213V2-432 PBSN	060J431019
J8006	79099107	JACK	MDC-070V	063D700005
J8007	79099108	RCA JACK	MSP-251V-05PBSN	060J401082
J8008	AD301037	RCA JACK	MSP-213V1-652 PBSN	060J411024
J8009	79099110	RCA JACK	MSP-242V2-01PBSN	060J411020

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME	DESCRIPTION	
		SWITCHES		
SW301	79099111	SWITCH SLIDE	SLD-12-592	0510S21041
SW601	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW602	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW603	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW604	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW605	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW681	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW682	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW684	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW686	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW687	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW688	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW689	79099112	SWITCH,TACT	SKQNAED010	0504201T32
SW3001	79099113	SWITCH(LEAF)	MXS01350MVP0	0508A11001
		P.C.BOARD ASSEMBLIES		
PCB010	79099114	PCB ASS'Y	VMA251A	A2A706C010
PCB130	79099115	PCB ASS'Y	VMA249B	A2A706C130
PCB240	79099116	PCB ASS'Y	VPA152A	A2A706C240
PCB270	79099117	PCB ASS'Y	VEA978A	A2A706C270
PCB280	79099118	PCB ASS'Y	VEA979A	A2A706C280
PCB390	79099119	PCB ASS'Y	VEA972A	A2A706C390
		MISCELLANEOUS		
B501	-----	CORE,BEADS	W4BRH3.5X6X1.0X2	024HT03563
B503	-----	CORE,BEADS	W4BRH3.5X6X1	024HT03564
B8001	-----	CORE,BEADS	W4BRH3.5X6X1	024HT03564
B8501	-----	CORE,BEADS	FCM2012H-102T04	024HC31022
B8502	-----	CORE,BEADS	FCM2012H-102T04	024HC31022
B8503	-----	CORE,BEADS	FCM2012H-102T04	024HC31022
BT601	-----	BATTERY,MANGAN	R03(AB)E_20_T	1412004008
CD102	79099120	CORD,JUMPER	2F061502	122F061502
⚠CD501	79099121	CORD,AC BUSH	0R419905	120R419905
CD502	79099122	CORD,JUMPER	2Y0G1701	122Y0G1701
CD651	79099123	CORD,JUMPER	2H072402	122H072402
CD652	79099124	CORD,JUMPER	2S0I0802	122S0I0802
CP101	79099125	CONNECTOR PCB SIDE	TOC-C09X-A1	0697290620
CP102	79099126	CONNECTOR PCB SIDE	IMSA-9604S-06Z14	069J760029
CP103	79099127	CONNECTOR PCB SIDE	TMC-T02X-E1	0697120320
CP502	79099128	WIRE HOLDER	B2013H02-16P	067U016019
CP503	79099129	CONNECTOR PCB SIDE	A2001WV2-6P	069S260629
CP601	79099130	CONNECTOR PCB SIDE	52492-1820	069R7I0479
CP651	79099131	CONNECTOR PCB SIDE	IMSA-9604S-07Z13	069J770019
CP652	79099132	CONNECTOR PCB SIDE	IMSA-9604S-18Z14	069J7I0029
CP681	79099133	CONNECTOR PCB SIDE	52492-0720	069R770479
CD2601	79099134	CORD,JUMPER	2H081006	122H081006
CD2603	79099135	CORD,JUMPER	2H060806	122H060806
CD6002	79099136	CABLE	SI-C109-31	06CQL03001
CD6003	79099137	CORD,RCA PIN	SI-B-701-2	06CQBA2001
CD8002	79099138	CORD,JUMPER	2H0I1801	122H0I1801
CD8501	79099139	CORD,CONNECTOR	CU2D3001	06CU2D3001
CD8502	79099140	CORD,CONNECTOR	CU262501	06CU262501
CP1701	79099141	CONNECTOR PCB SIDE	52147-1610	069R2G0589
CP2601	79099142	CONNECTOR PCB SIDE	04_6232_108_015	069EV8T020
CP2602	79099143	CONNECTOR PCB SIDE	04_6232_123_015	069EVNT020
CP2603	79099126	CONNECTOR PCB SIDE	IMSA-9604S-06Z14	069J760029
CP3001	79099011	CONNECTOR PCB SIDE	TMC-J12P-B2	06972C0010
CP8001	79099144	CONNECTOR PCB SIDE	A2001WV2-13P	069S2D0629
CP8002	79099145	CONNECTOR PCB SIDE	IMSA-9604S-18Z13	069J7I0019
CP8502	79099145	CONNECTOR PCB SIDE	IMSA-9604S-18Z13	069J7I0019
CUS811	79099146	CUSHION A		800WFAA006
⚠DK4001	79099147	DECK CD	TU2020R	169J00010A
⚠F501	AD300688	FUSE	51MS040LCC	081PC04004
FH501	-----	HOLDER,FUSE	EYF-52BC	06710T0006
FH502	-----	HOLDER,FUSE	EYF-52BC	06710T0006
NR1001	-----	R,NETWORK	CAY16-101-J-4R	110N4101M3
NR1002	-----	R,NETWORK	CAY16-101-J-4R	110N4101M3
NR1003	-----	R,NETWORK	CAY16-101-J-4R	110N4101M3
NR1004	-----	R,NETWORK	CAY16-101-J-4R	110N4101M3
NR1005	-----	R,NETWORK	CAY16-101-J-4R	110N4101M3
NR1006	-----	R,NETWORK	CAY16-101-J-4R	110N4101M3
NR1007	-----	R,NETWORK	CAY16-101-J-4R	110N4101M3
NR1008	-----	R,NETWORK	CAY16-101-J-4R	110N4101M3

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	PART NAME		DESCRIPTION
		MISCELLANEOUS		
NR1009	-----	R,NETWORK	CAY16-101-J-4R	110N4101M3
NR1010	-----	R,NETWORK	CAY16-101-J-4R	110N4101M3
NR1011	-----	R,NETWORK	CAY16-101-J-4R	110N4101M3
OS601	79099149	REMOTE RECEIVER	PIC-37143TH5	077Q037002
OS8001	79099150	OPTICAL DEVICE	GP1FA550TZ	07A9000004
TM601	79099151	TRANSMITTER	SBKM00033A	07660FE010
⚠TU301	79099152	RF UNIT	TCMN0682PA13D(4)	0162K00027
V601	79099153	TUBE FLUORSCENT DISPLAY	HNV-09SS33	096F90R402
X101	79099154	CRYSTAL	HC-49/U	100CT3R508
X1001	79099155	CERAMIC OSCILLATOR	CSTCC9M00G53-R0	1002T00901
X3001	79099156	CRYSTAL	HC-49/U-S	100CT01002
X3002	79099157	CRYSTAL	DT-26	100DA32R01
X3003	79099158	CRYSTAL	HC-49/U-S	100CT01403
X8501	79099159	CRYSTAL	HC-49/U-S	100WT02706

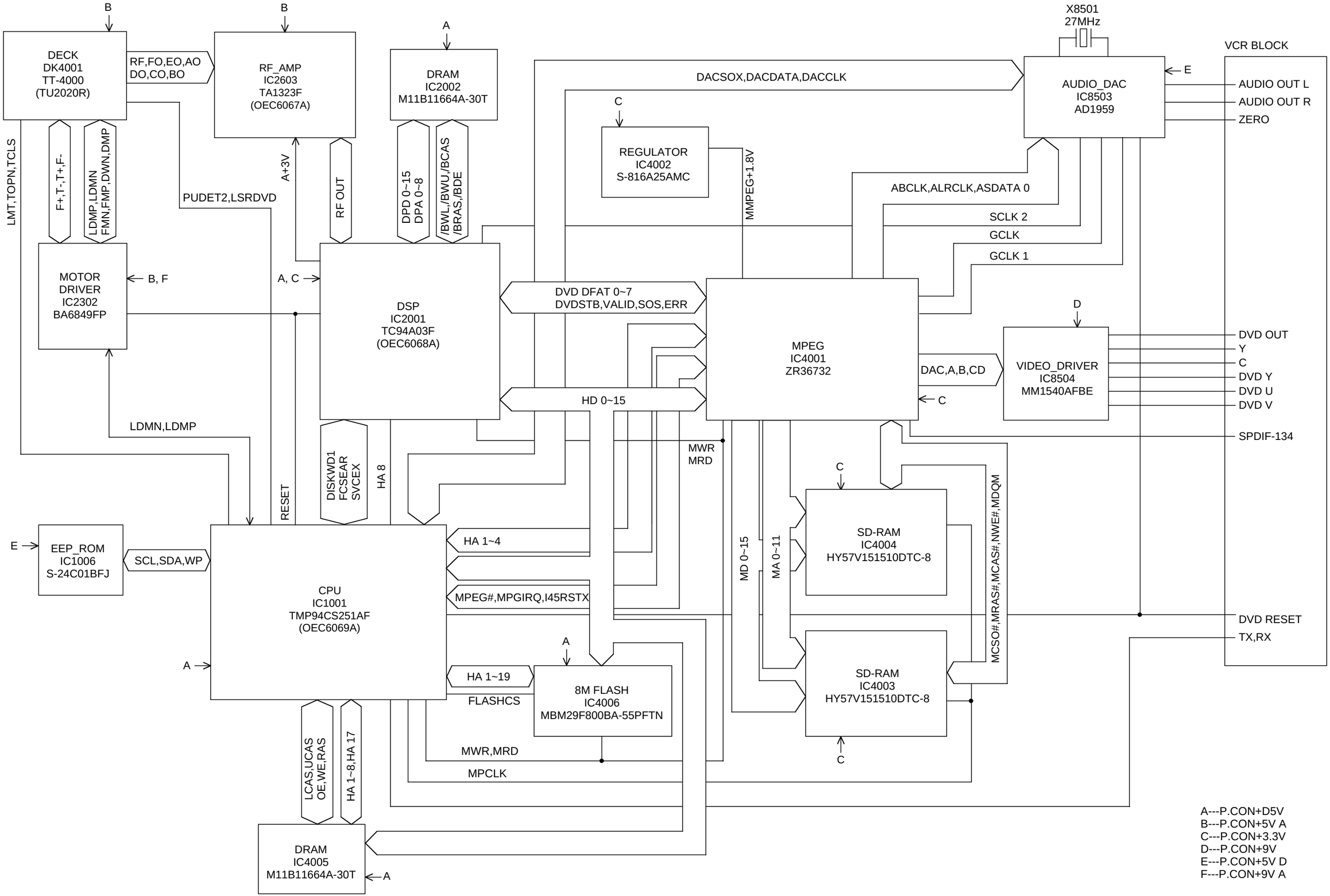
RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

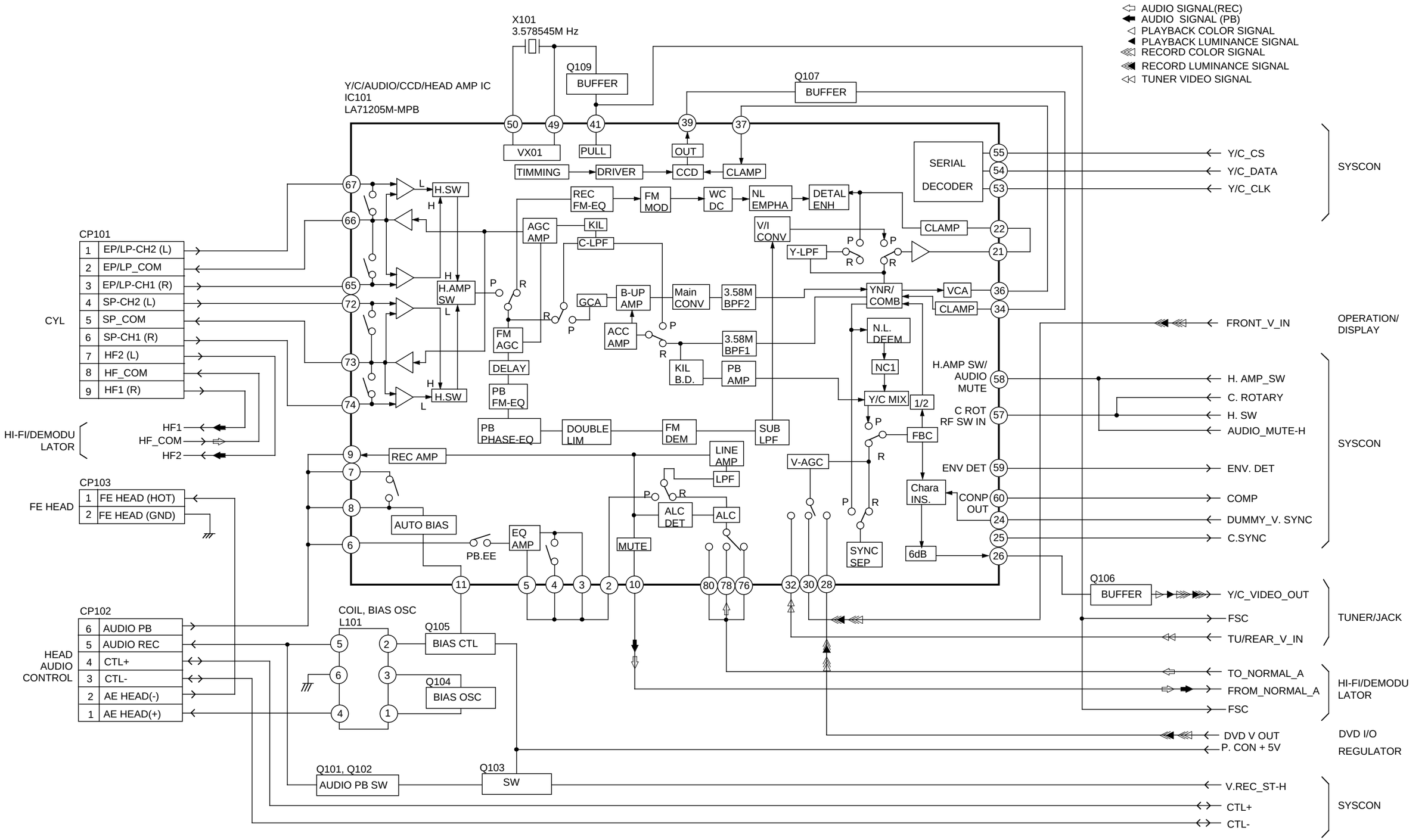
DVD BLOCK DIAGAM



F-1

F-2

Y/C/AUDIO/CCD/HEAD AMP BLOCK DIAGRAM



SYSTEM CONTROL BLOCK DIAGRAM

SYSCON/TIMER/SERVO
IC1001 OEC0119B

REGULATOR
VCR_POWER_ON-H
VCR_POWER_ON-L
POWER_FAIL

DVD I/O
SYS_MUTE
RX
TX
DVD RESET

OPERATION/
DISPLAY
1G/VCR/T-REC_LED
FL_CLK
FL_DATA
FL_CS
DVD_LED
KEY-B
KEY-A
REM_IN

42	HEATER SW	
41	POWER ON-L	
37	POWER FAIL	
88	SYS MUTE	
65	RX	
80	OSC 2	X1001 10MHz
78	OSC 1	
64	TX	
75	X1	X3002 32.768KHz
76	X2	
44	HD RESET	
48	1G/VCR/T-REC LED	
89	FL CLK	
90	FL DATA	
83	FL CS	
46	DVD LED	
29	KEY-B	
30	KEY-A	
43	REM IN	

REGULATOR
AT 5.2V
CENT LED D3001
BOT SENSOR Q3008
EOT SENSOR Q3006
CENT SW Q3007
P.CON+5V
REEL SENS Q3001
REEL SENS Q3002
P.CON+5V

25	BOT-H	
26	EOT-H	
94	CENT LED	
70	REEL-T	
69	REEL-S	

CP3001

11	CYL FG/PG
12	CYL DRIVE
10	LDM CTL
5	I LIMIT
9	CAP CTL
1	CAP FG
4	CAP.M F/R
2	CAP VCO
8	LD/CY_VCO
6	GND[M]

CAPSTAN DD UNIT

MOTOR_GND
AT+12.6V
CAP_VCO

103	CYL SPEED UP
104	DFG/PG
107	DRUM PWM
97	LD M CTL
102	CAP FULL
108	CAP PWM
84	CAP LIMIT
9	CAP FG
98	CAP FWD-L
38	CFG IN 2

DVD_POWER_ON H
45 DVD POWER ON H

REGULATOR
MS_SEN B Q3004
MS_SEN A Q3005
P.CON +5V

28	MS SEN-A
27	MS SEN-B

HIFI ENV	32	
HIFI H.SW	106	
ST SELECT	31	
4 FSC OUT	21	X3003 14.3818MHz
4 FSC IN	22	
C.SYNC	111	
DUMMY V.SYNC	109	
VIDEO H.SW	105	
C.ROTARY	99	
Y/C CS	93	
AUDIO MUTE-H	95	
H.AMP SW	100	
V.REC ST-H	96	
V ENV	24	
CTL(+)	3	
CTL(-)	4	
Y/C DATA	54	
Y/C CLK	53	
COMP	101	
AV SW1	92	
AV SW2	91	
CV IN1	17	
TUNER A MUTE-H	85	
POWER MUTE L	87	
AFT S.CURVE	33	
CV OUT	19	
VCR-H	86	
IIC CLK	61	
IIC SDA	62	
VIDEO MUTE H	40	

HI-FI/
DEMODULATOR
V.REC_ST-H
AUDIO_MUTE-H
IIC_CLK
IIC_DATA
HIFI_ENV.DET
HIFI_H.SW
ST_SELECT

Y/C/AUDIO/
CCD/HEAD AMP
C.SYNC
DUMMY_V.SYNC
H.SW
C.ROTARY
Y/C CS
AUDIO_MUTE-H
H.AMP_SW
V.REC_ST-H
ENV.DET
CTL+
CTL-
Y/C_DATA
Y/C_CLK
COMP
AV_SW1
AV SW2
SW_V_ OUT
TUNER_A_MUTE-H
POWER_MUTE-L
AFT-S.CURVE
VIDEO_OUT
TV/VCR
IIC_CLK
IIC_DATA
VIDEO_MUTE-H

TUNER/
JACK

TAB SW 35 REC SAFTY SW

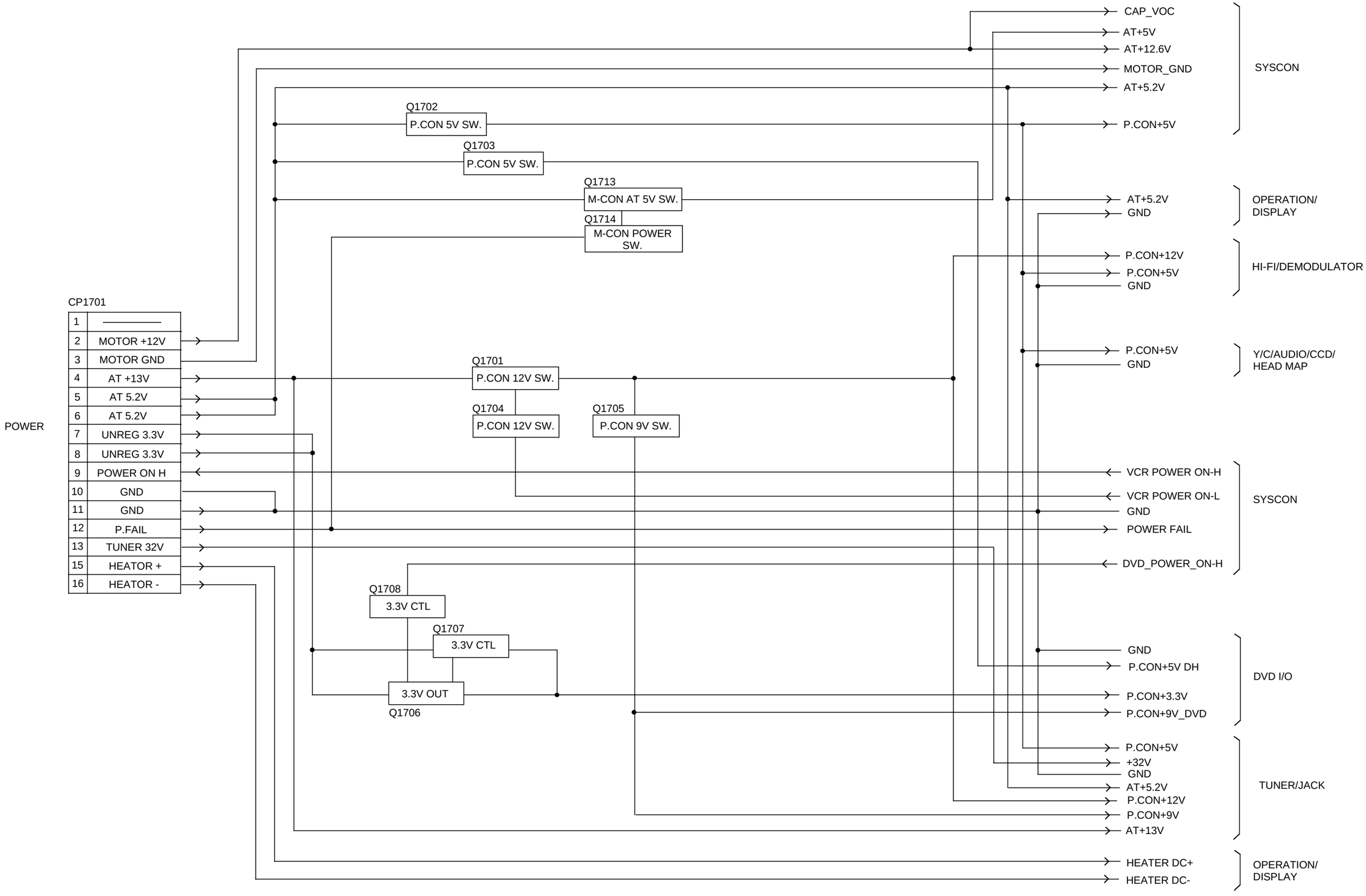
EEPROM IC3099 S-24C02BDP-1A
6 SCL
5 SDA

IC3003
PST3231NR
RESET 77 SYSTEM RESET 2 AT+5V

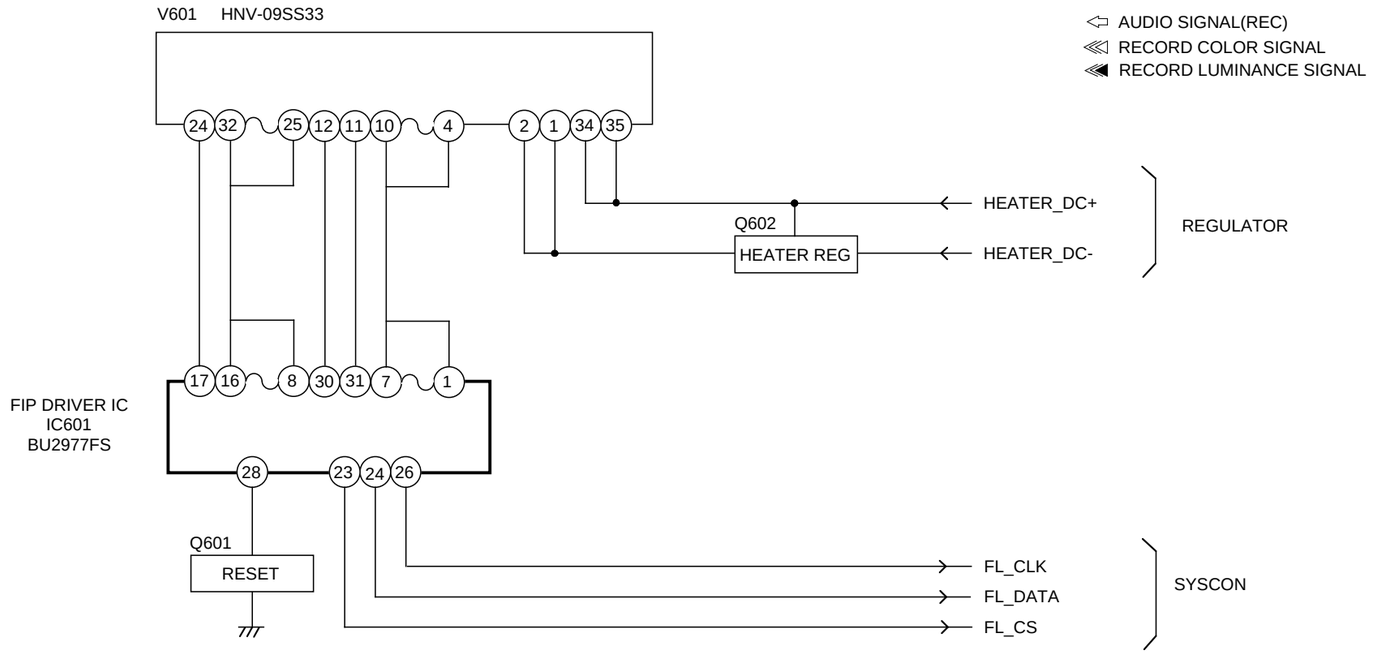
REGULATOR

◁ PLAYBACK COLOR SIGNAL
◀ PLAYBACK LUMINANCE SIGNAL
⋘ RECORD COLOR SIGNAL
⋘ RECORD LUMINANCE SIGNAL

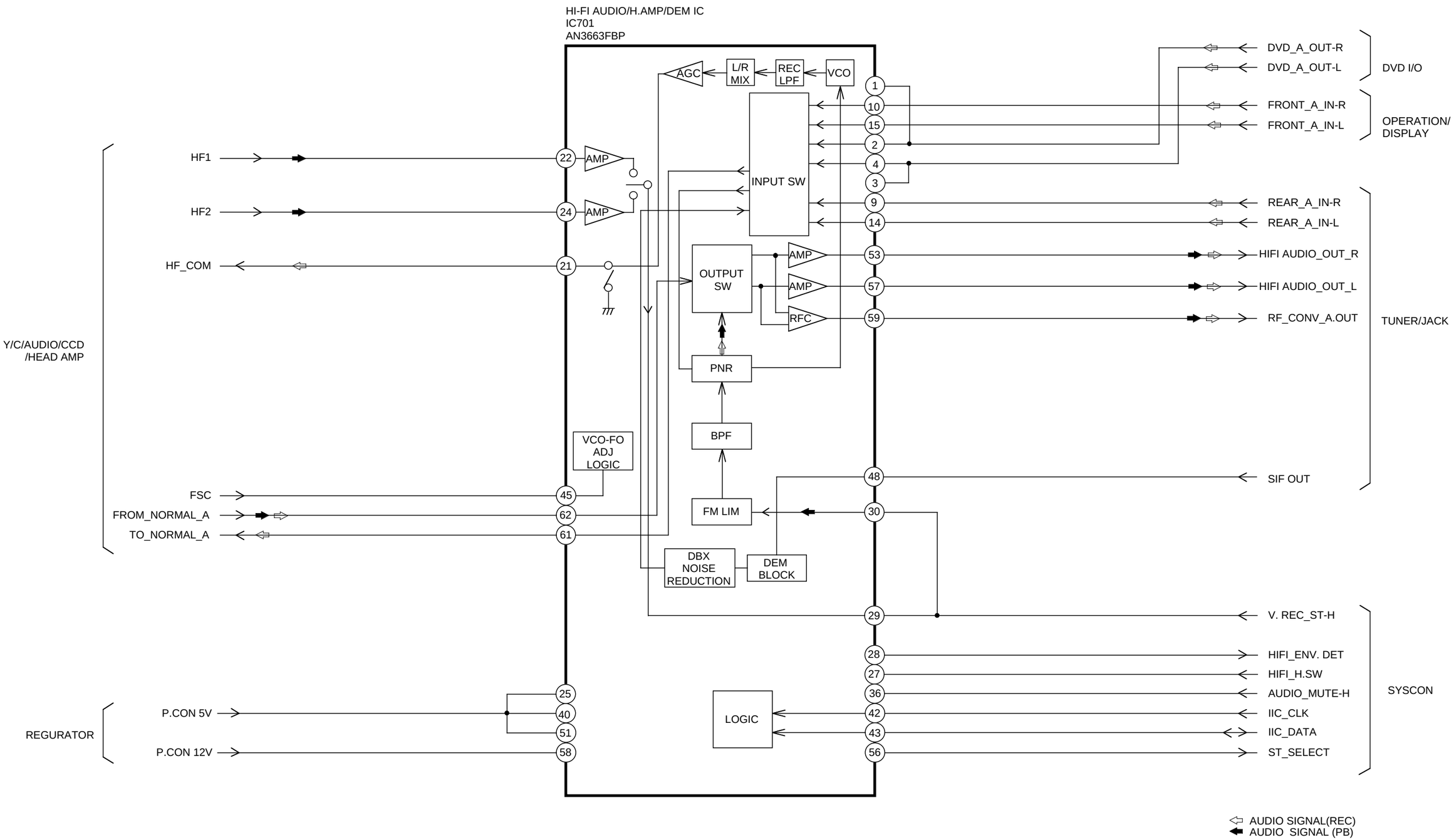
REGULATOR BLOCK DIAGRAM



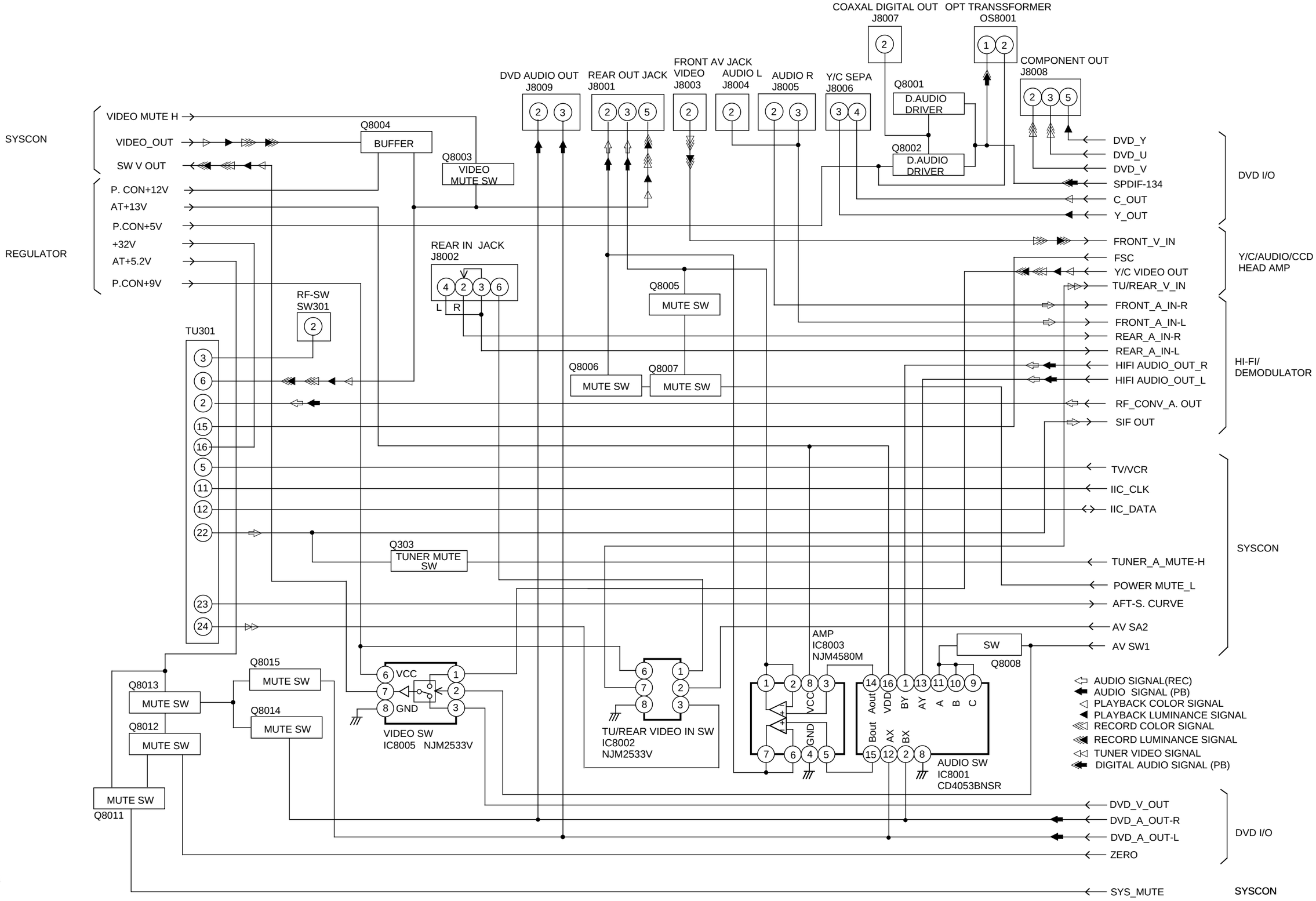
OPERATION/DISPLAY BLOCK DIAGRAM



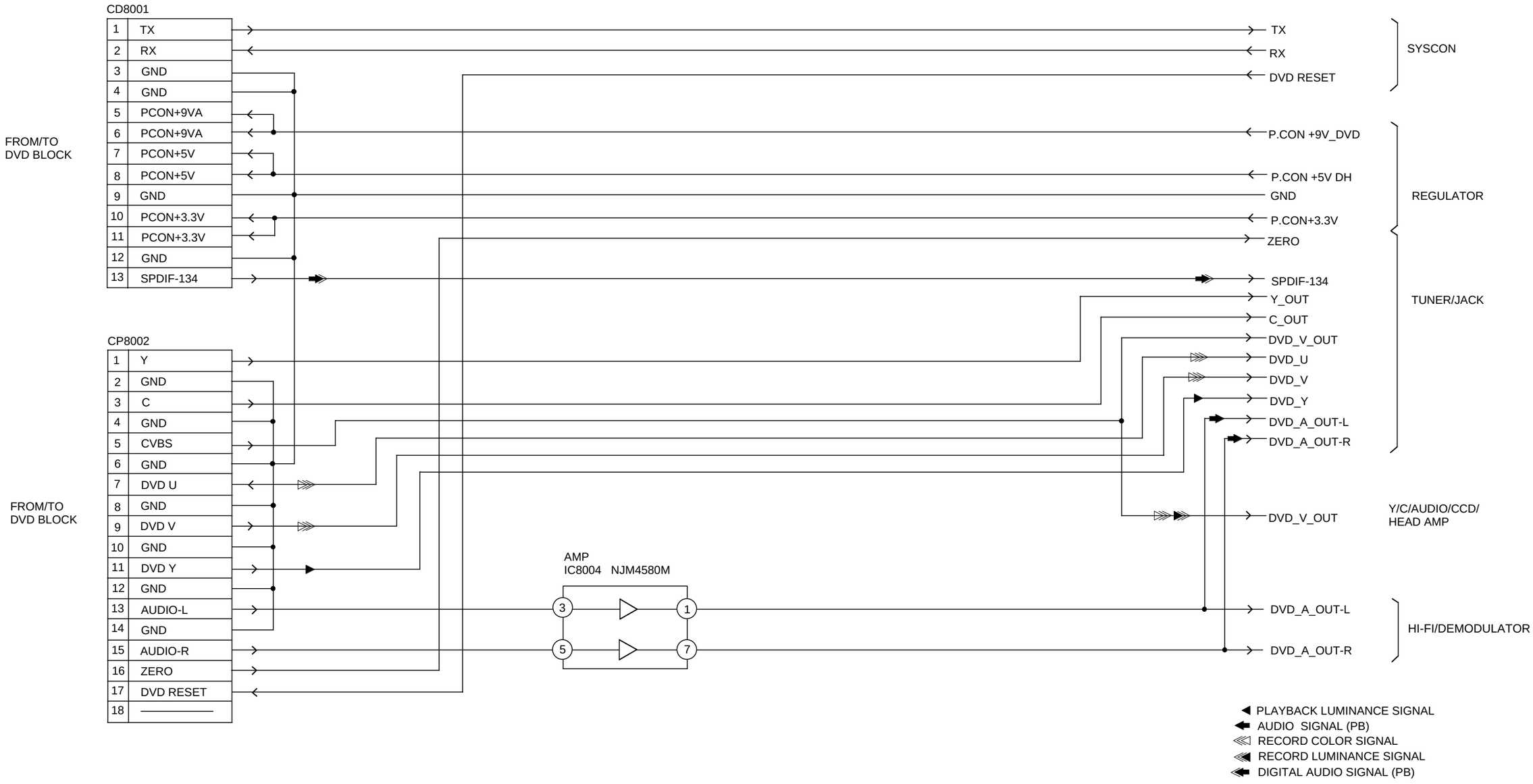
Hi-Fi/DEMODULATOR BLOCK DIAGRM



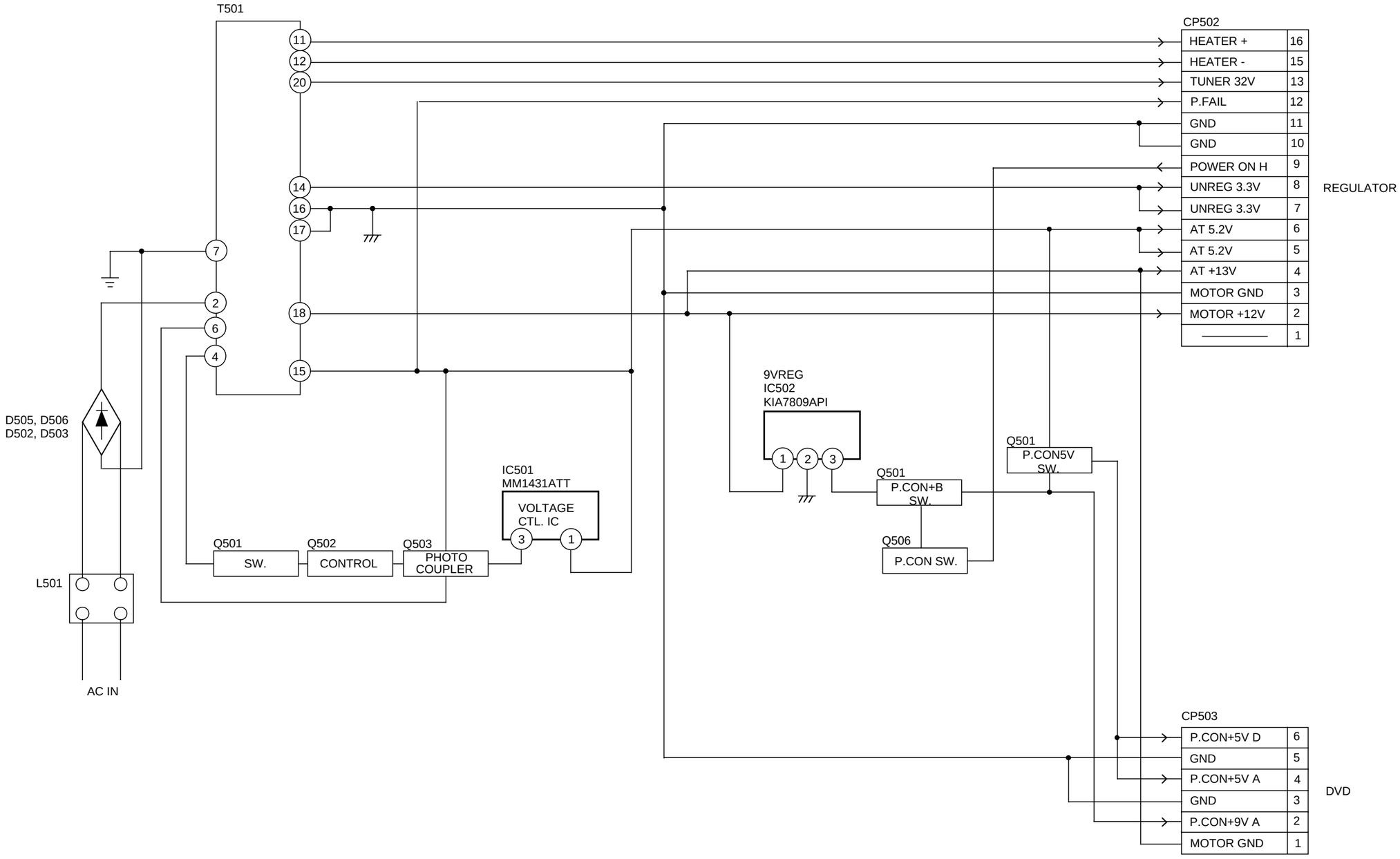
TUNER/JACK BLOCK DIAGRAM



DVD IN/OUT BLOCK DIAGRAM

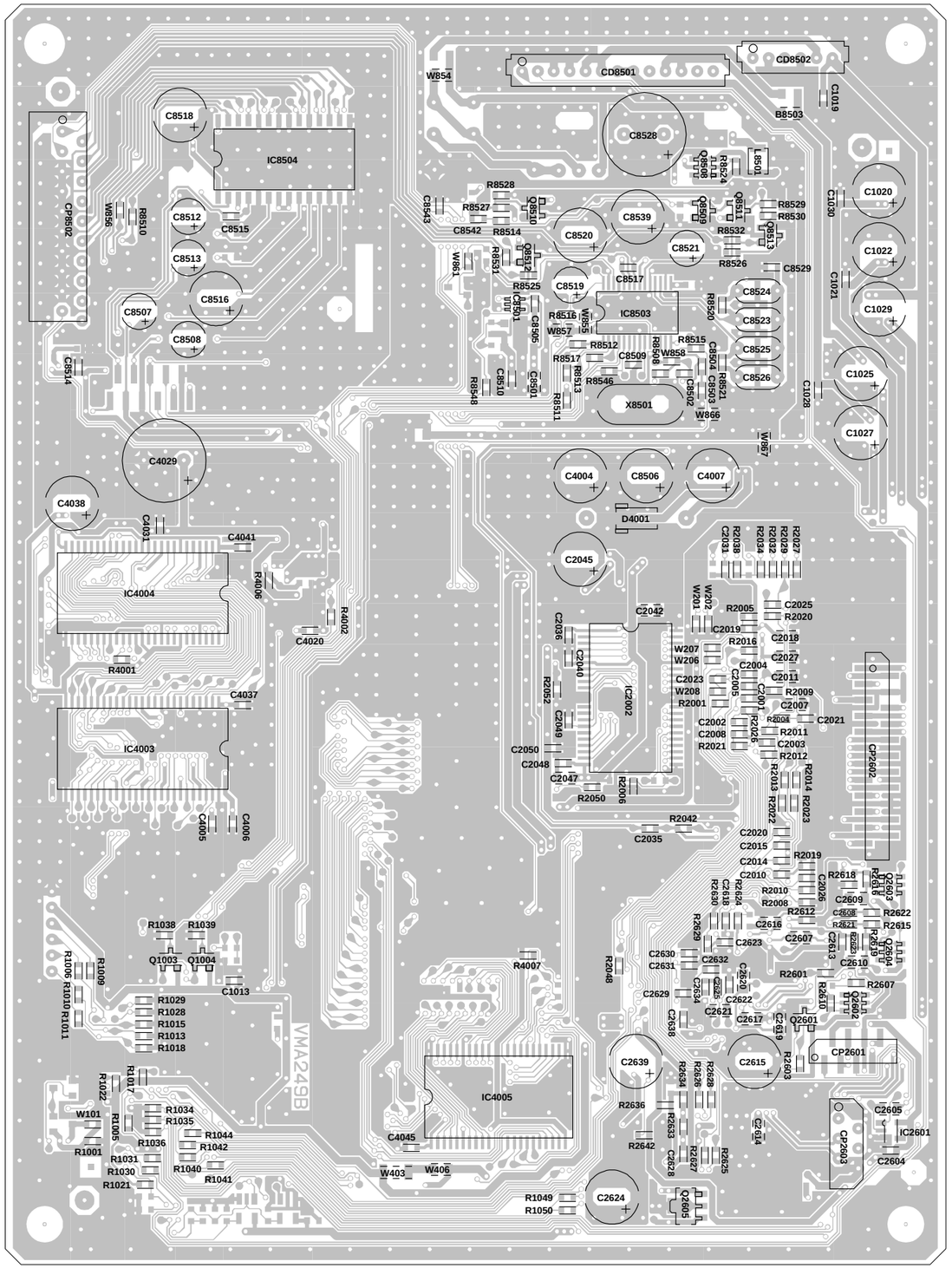


POWER BLOCK DIAGRAM



PRINTED CIRCUIT BOARDS

DVD (TOP SIDE)


CD8501
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IC8503
X8501
IC4004
IC4003
IC2002
IC4005
VMA249B
CP8502
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CP2601
CP2603
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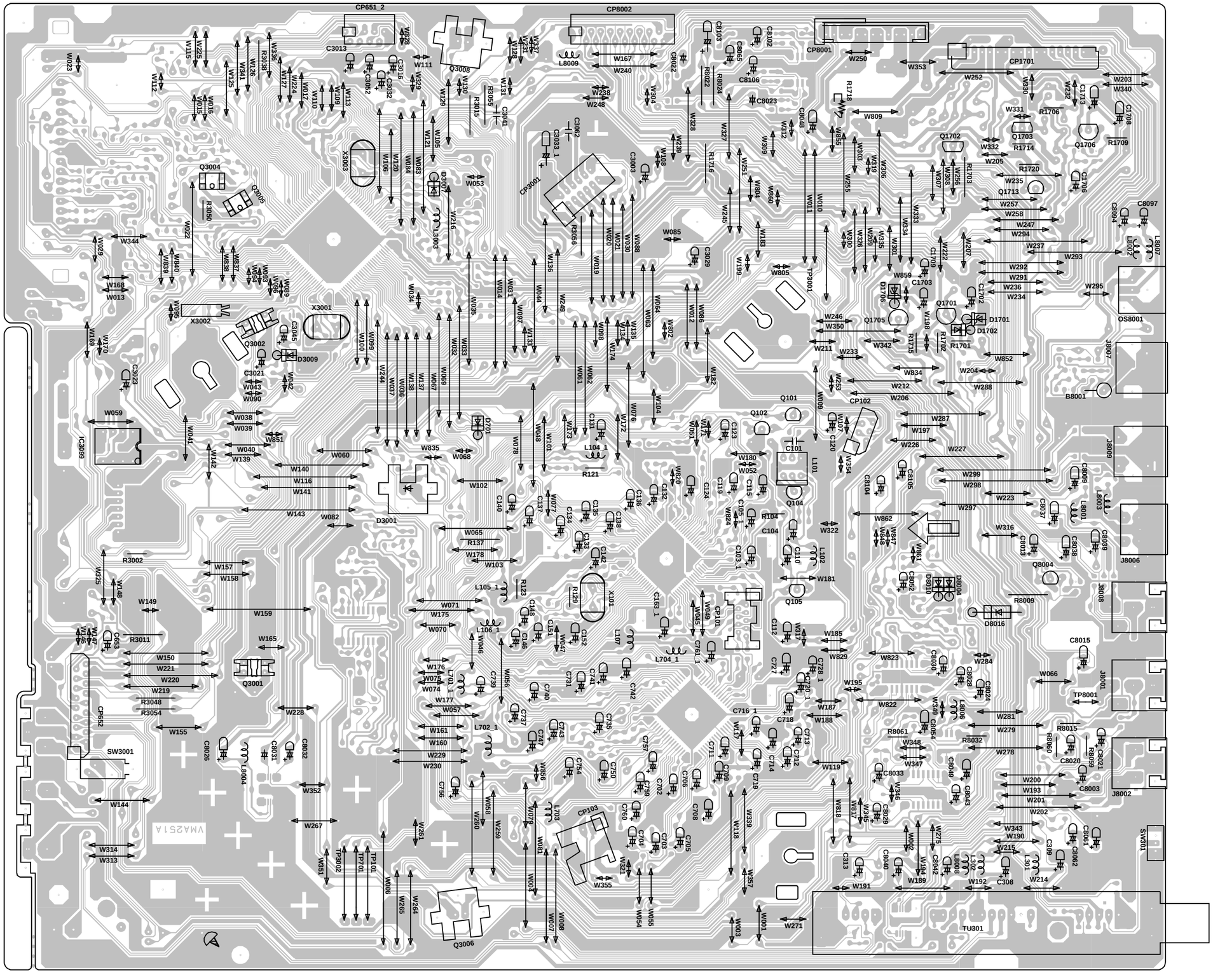
PRINTED CIRCUIT BOARDS
VCR (INSERTED PARTS)
SOLDER SIDE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PRINTED CIRCUIT BOARDS
VCR (CHIP MOUNTED PARTS)
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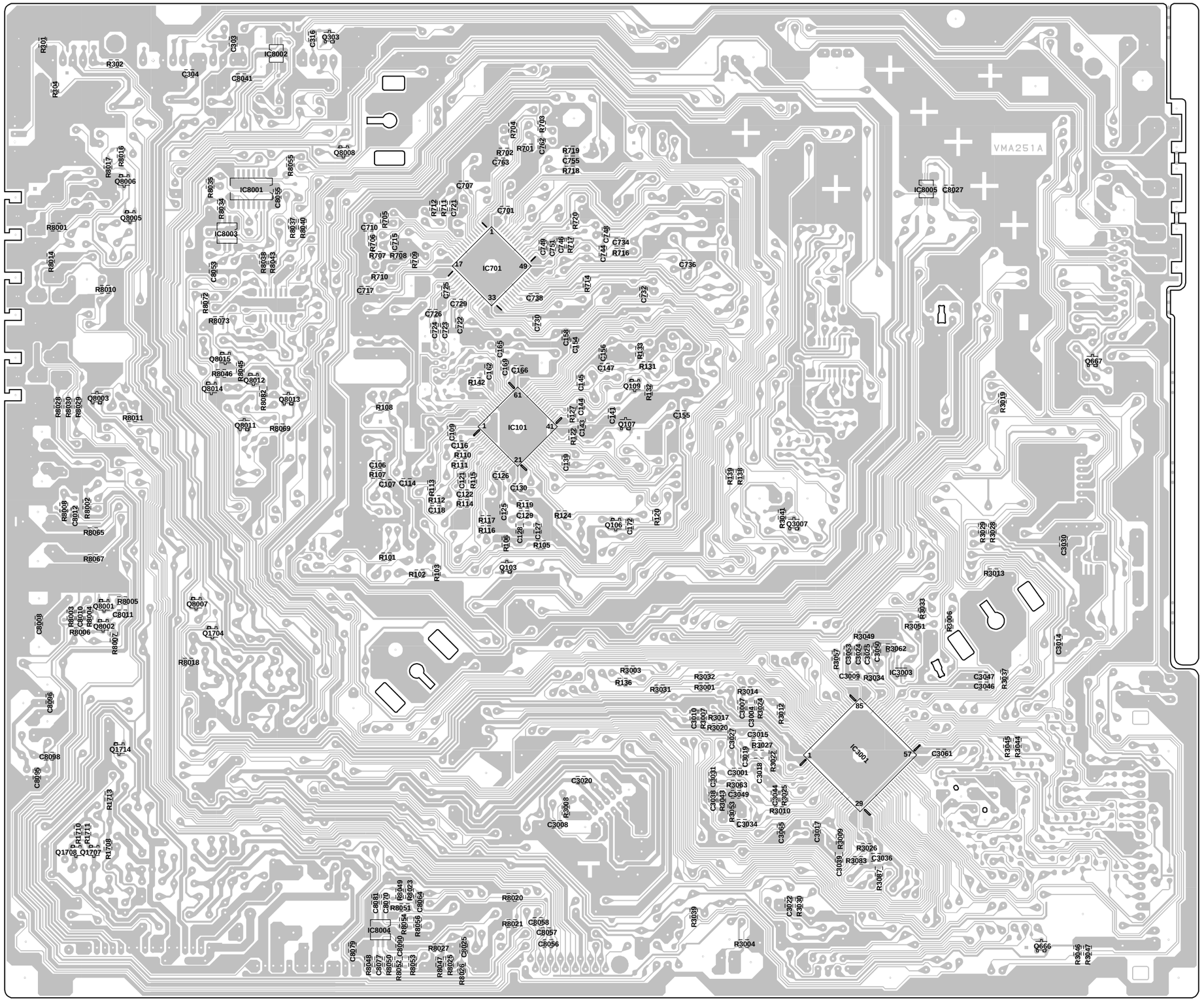
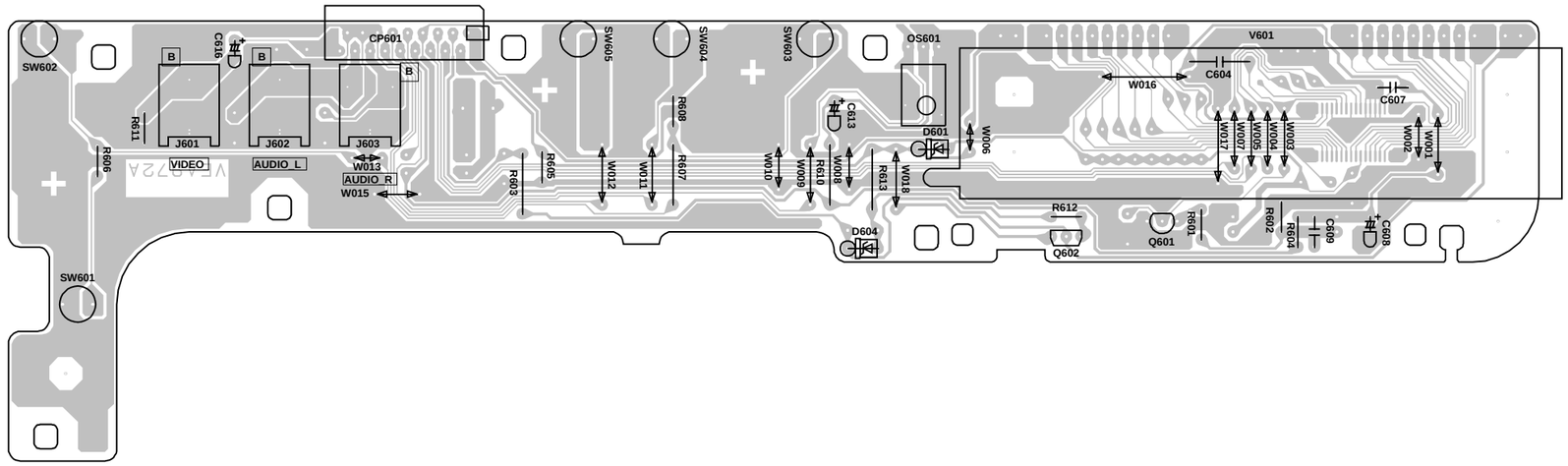
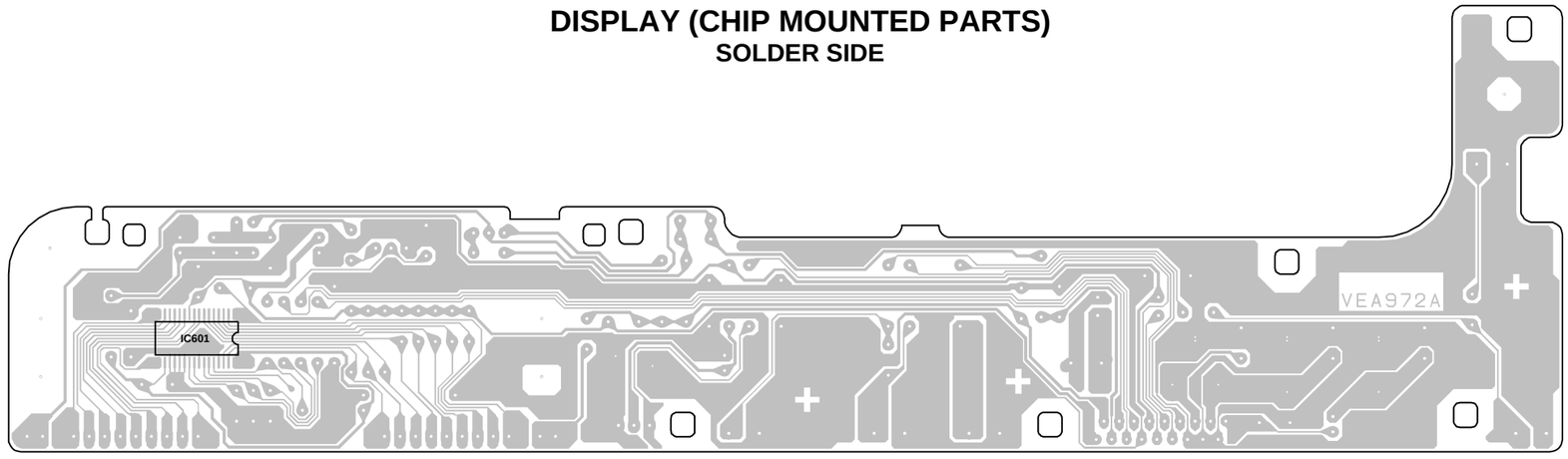


PRINTED CIRCUIT BOARDS

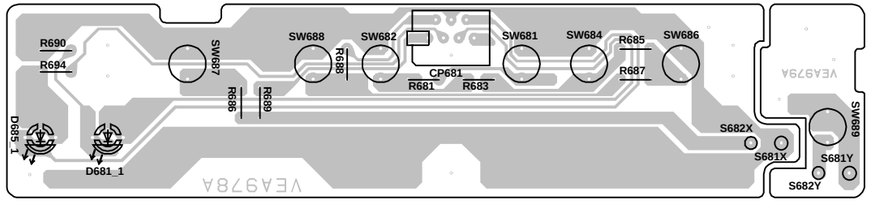
DISPLAY (INSERTED PARTS)
SOLDER SIDE



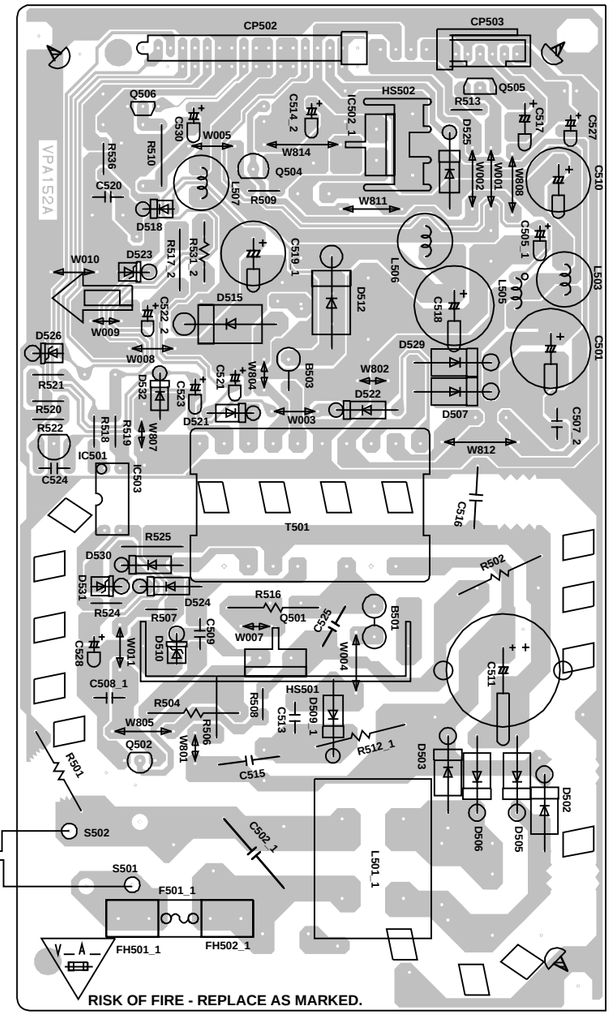
DISPLAY (CHIP MOUNTED PARTS)
SOLDER SIDE



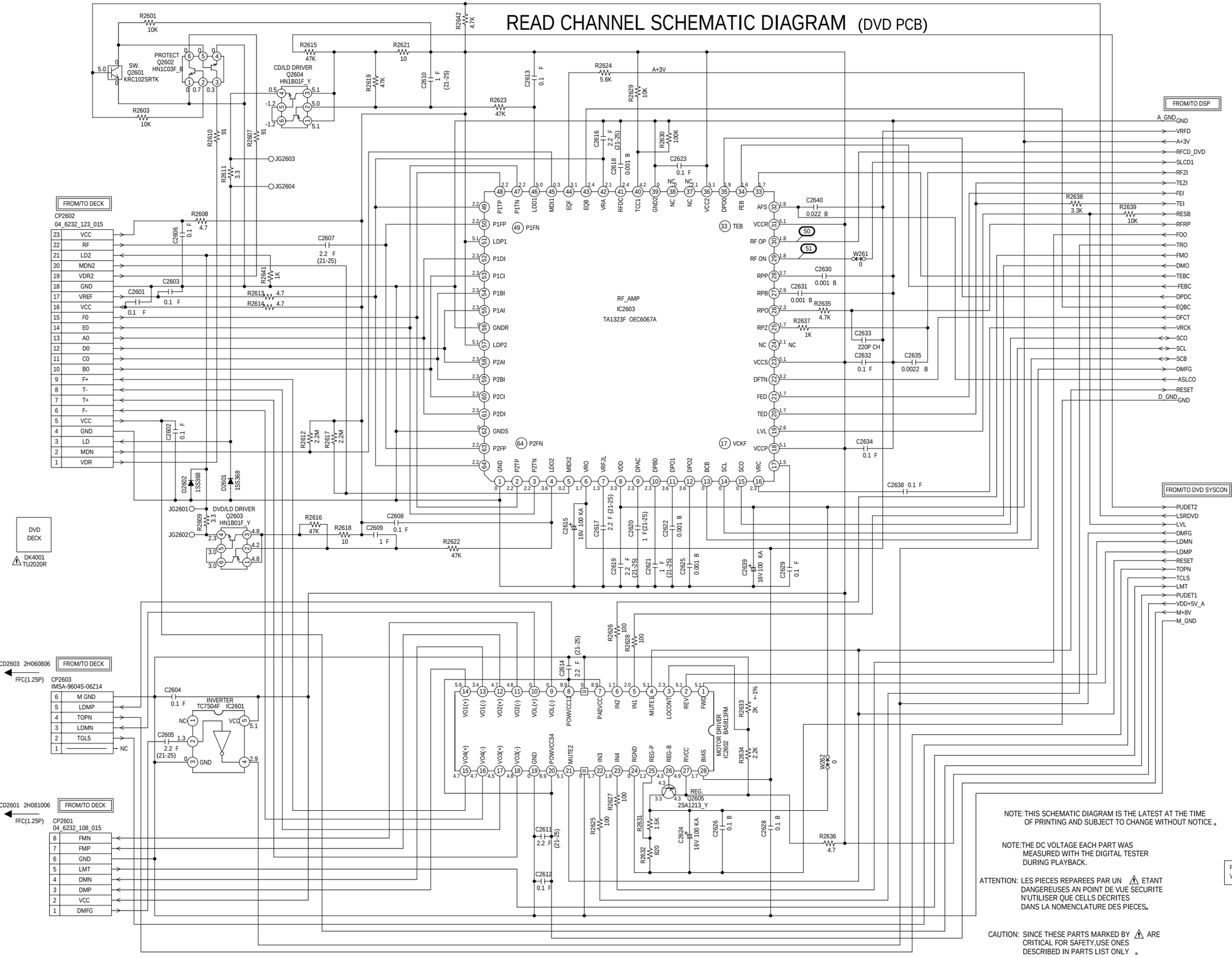
OPERATION1/OPERATION2
SOLDER SIDE



POWER
SOLDER SIDE



READ CHANNEL SCHEMATIC DIAGRAM (DVD PCB)



H-1 H-2

DSP SCHEMATIC DIAGRAM
(DVD PCB)

D-RAM
IC2002
MSM54V16256B-30

DSP
IC2001
TC94A03F OEC6068A

FROM/TO READ CHANNEL

FROM/TO AUDIO/VIDEO

FROM/TO MPEG

FROM/TO DVD SYSCON

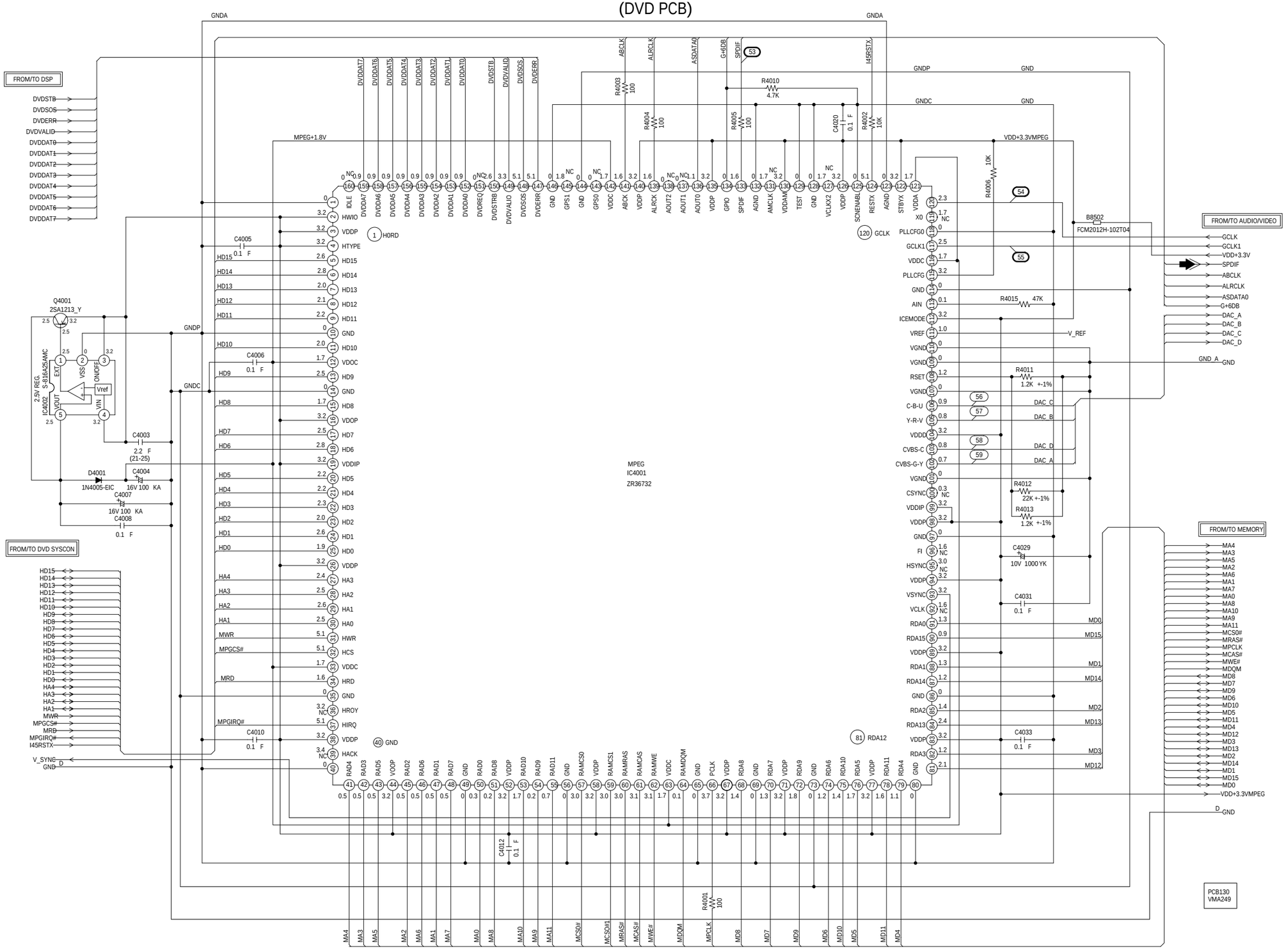
SERVO SHUT DOWN
Q2001
2SC3326_B

NOTE:THE DC VOLTAGE EACH PART WAS
MEASURED WITH THE DIGITAL TESTER
DURING PLAYBACK.

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

PCB130
VMA249

MPEG SCHEMATIC DIAGRAM
(DVD PCB)

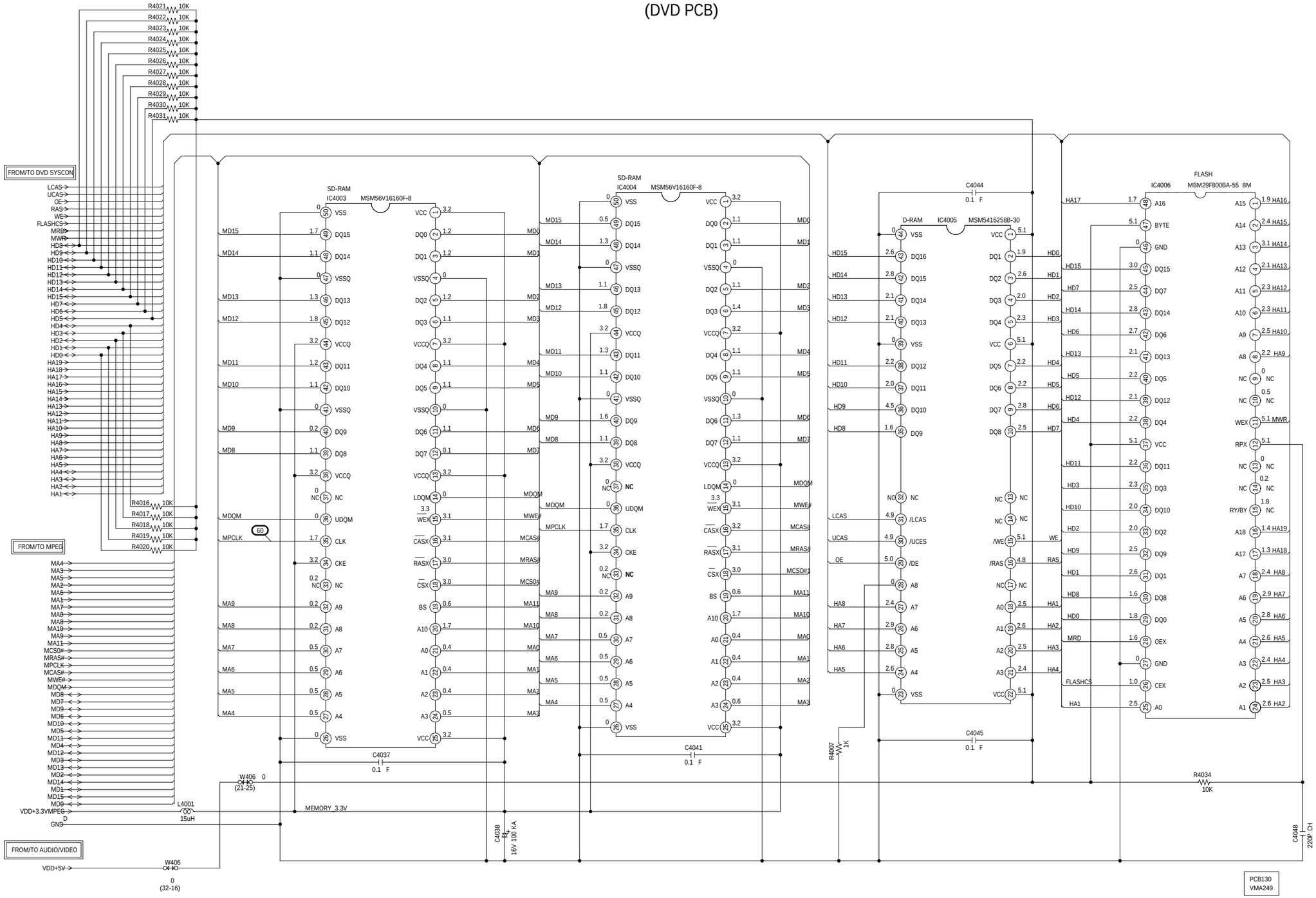


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

MEMORY SCHEMATIC DIAGRAM

(DVD PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

AUDIO/VIDEO SCHEMATIC DIAGRAM (DVD PCB)

FROM/TO DVD SYSCON
M+8V
M_GND
RSTOX
SI2
SO2
VDD+3.3V
VDD+5V
VDD+5V_A
GND
AT+5V
DACSOX
DACDATA
DACCLK
RGBON
RSTX

FROM/TO AUDIO/VIDEO
VDD+5V

FRO/TO DSP
A_GND
GND
D_GND
GND
VDD+5V
VDD+3.3V
SCLK2

FROM/TO MPEG
VDD+3.3V
GCLK
GCLK1
SPDIF
ABCLK
ALRCLK
ASDATA0
G+6DB
DAC_A
DAC_B
DAC_C
DAC_D
GND
GND_A

B8501 FCM2012H-102T04

DACDATA R8516 100
DACCLK R8512 220
DACSOX R8513 100
RSTX R8517 4.7K
ALRCLK
ABCLK
ASDATA0 R8546 100

ATDIO DAC/PLL CLOCK GNERATOR
IC8503 AD1959YRSRL

1	CCLK	5.1	32	CDATA	5.1
2	CLATCH	5.1	31	MUTE	0
3	RSTX	5.1	30	ZERO	0
4	LRCK	1.6	29	FILTB	3.2
5	BCLK	1.6	28	AVDD	5.1
6	SDATA	1.1	27	OUTL	2.4
7	DVDD	5.1	26	AGND	0
8	DGND	0	25	FILTR	2.4
9	SCLKO	2.6 NC	24	DUTR	2.4
10	MCLK	2.3	23	AGND	0
11	XOUT	2.5	22	LF1	2.9
12	XIN	2.5	21	LF0	1.9
13	SCLK1	2.6	20	PGND	0
14	SCLK2	3.4	19	PVDD	5.1

R8511 10K
C8509 0.1 F
R8545 100
C8502 33P CH
R8508 150
X8501 27MHz HC-49-US
C8503 33P CH
C8504 20P CH
W858
61
R8515 100
R8544 100
W869 (21-25)
C8501 2.2 F (21-25)
C8510 0.1 F
C8505 0.1 F
C8506 16V 100 KA
R8548 100
2INOUT AND GATE IC8501 TC7SH08FU
IN_B 2.3
IN_A 5.1
VCC 5.1
GND 0
OUT 2.3

C8519 16V 10 KA
C8517 0.1 F
C8521 16V 10 KA
C8523 0.0018 M M
C8529 0.1 F
R8520 680
C8524 0.0033 M M
C8520 16V 100 KA
C8525 0.0018 M M
R8521 680
C8526 0.0033 M M

AUDIO_GND
C8542 0.01 B
R8514 10K
G+6DB

AUDIO GAIN CONTROL Q8509 KTC3875S_Y RTK
C8539 16V 100 KA

AUDIO GAIN CONTROL Q8510 KRA102SRTK
R8527 10K
R8528 10K
R8529 10K

AUDIO GAIN CONTROL Q8511 KRA102SRTK
R8530 10K

AUDIO GAIN CONTROL Q8512 2SC3326_B
R8525 5.1K +-0.5%
R8531 5.1K +-0.5%

AUDIO GAIN CAONTROL Q8513 2SC3326_B
R8532 5.1K +-0.5%
R8526 5.1K +-0.5%

SI2
SO2
SPDIF
RSTOX
ZERO
AUDIO_L
AUDIO_R
GND_A
L8501 00 15UH

REG. Q8508 HN1C03F_B
VCC+9V
R8524 680

VIDEO DRIVER IC8504 MM1540AFBE

1	VCC	8.2	28	VCC2	8.2
2	VIN	5.4 NC	27	VOUT	5.0
3	YCMIX	5.7	26	PS1	0 NC
4	CIN	4.4	25	COUT	3.9
5	CLP	0	24	VEE2	0
6	YIN1	4.8	23	YOUT1	5.1
7	MUTE1	6.8	22	VEE2	0
8	MUTE2	5.7	21	VEE2	0
9	YIN2	4.7	20	YOUT2	5.0
10	GND	4.1	19	VEE2	0
11	CBIN	4.5	18	CBOUT	3.9
12	D/S	0	17	PS2	0.1 NC
13	CRIN	4.4	16	CROUT	3.9
14	VEE1	0	15	VEE2	0

C8518 16V 100 KA
C8522 0.1 F
C8528 10V 1000 YK

R8510 75 +-1%
R8522 75 +-1%
R8523 75 +-1%
R8540 75 +-1%
R8541 75 +-1%
R8542 75 +-1%

C8512 16V 10 KA
C8513 16V 10 KA
C8516 16V 100 KA
C8507 16V 10 KA
C8508 16V 10 KA
C8515 0.1 F
C8514 0.1 F
R8518 10K
R8519 10K

VIDEO BUFFER Q8501 KTA1504S_Y RTK
R8501 75 +-1%
R8503 2.2K
W851

VIDEO BUFFER Q8502 KTA1504S_Y RTK
R8502 75 +-1%
R8505 2.2K

VIDEO BUFFER Q8503 KTA1504S_Y RTK
R8506 2.2K
R8509 2.2K

VIDEO BUFFER Q8505 KTA1504S_Y RTK
R8504 75 +-1%
R8507 75 +-1%

DAC_A
DAC_D
DAC_C
DAC_B
RGBON

W856 0
C
CVBS
Y_1
Y_2
CB
CR

D8501 1SS226
D8502 1SS226
D8503 1SS226
D8504 1SS226
D8505 1SS226

C8543 0.01 B
C8537 0.1 F

W855
W857
B8503 FCM2012H-102T04
W854 (21-25)
L8507 W5T29X7.5X19
W861 0
W866 0 (21-25)
W867 0 (21-25)

FROM/TO POWER
CD8502 CU262501

P.CON+5V D	1	
GND	2	
P.CON+5V A	3	
GND	4	
P.CON+9V A	5	
MOTOR GND	6	

FROM/TO DVD I/O
CD8501 CU2D3001

TX	1	
RX	2	
GND	3	
GND	4	
P.CON+9V	5	
P.CON+9V	6	
P.CON+D5V	7	
P.CON+D5V	8	
GND	9	
P.CON+3.3V	10	
P.CON+3.3V	11	
GND	12	
SPDIF-134	13	

62 63 64 65 66 67 68 69 70

FROM/TO DVD I/O
FFC(1.25P)
CD8002 2H0I1801

CP8502 IMSA-9604S-18Z13

Y(G)	18	
GND	17	
C(CVBS)	16	
GND	15	
CVBS	14	
GND	13	
DVD U(B)	12	
GND	11	
DVD V(R)	10	
GND	9	
DVD Y(G)	8	
GND	7	
AUDIO-L	6	
GND	5	
AUDIO-R	4	
ZERO	3	
DVD RESET	2	
RGB-H	1	

PCB130
VMA249

CAUTION: DIGITAL TRANSISTOR

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

◀ PLAYBACK LUMINANCE SIGNAL
◁ PLAYBACK COLOR SIGNAL
◁◁ PLAYBACK VIDEO SIGNAL
◀◀ DIGITAL AUDIO SIGNAL(PB)
◀ AUDIO SIGNAL(PB)

DVD SYSCON SCHEMATIC DIAGRAM

(DVD PCB)

FRO/TO DSP

FROM/TO MPEG

FROM/TO MEMORY

FROM/TO READ CHANEL

FRO/TO AUDIO/VIDEO

MICON
IC1001
TMP94CS251AF OEC6069A

CAUTION: DIGITAL TRANSISTOR

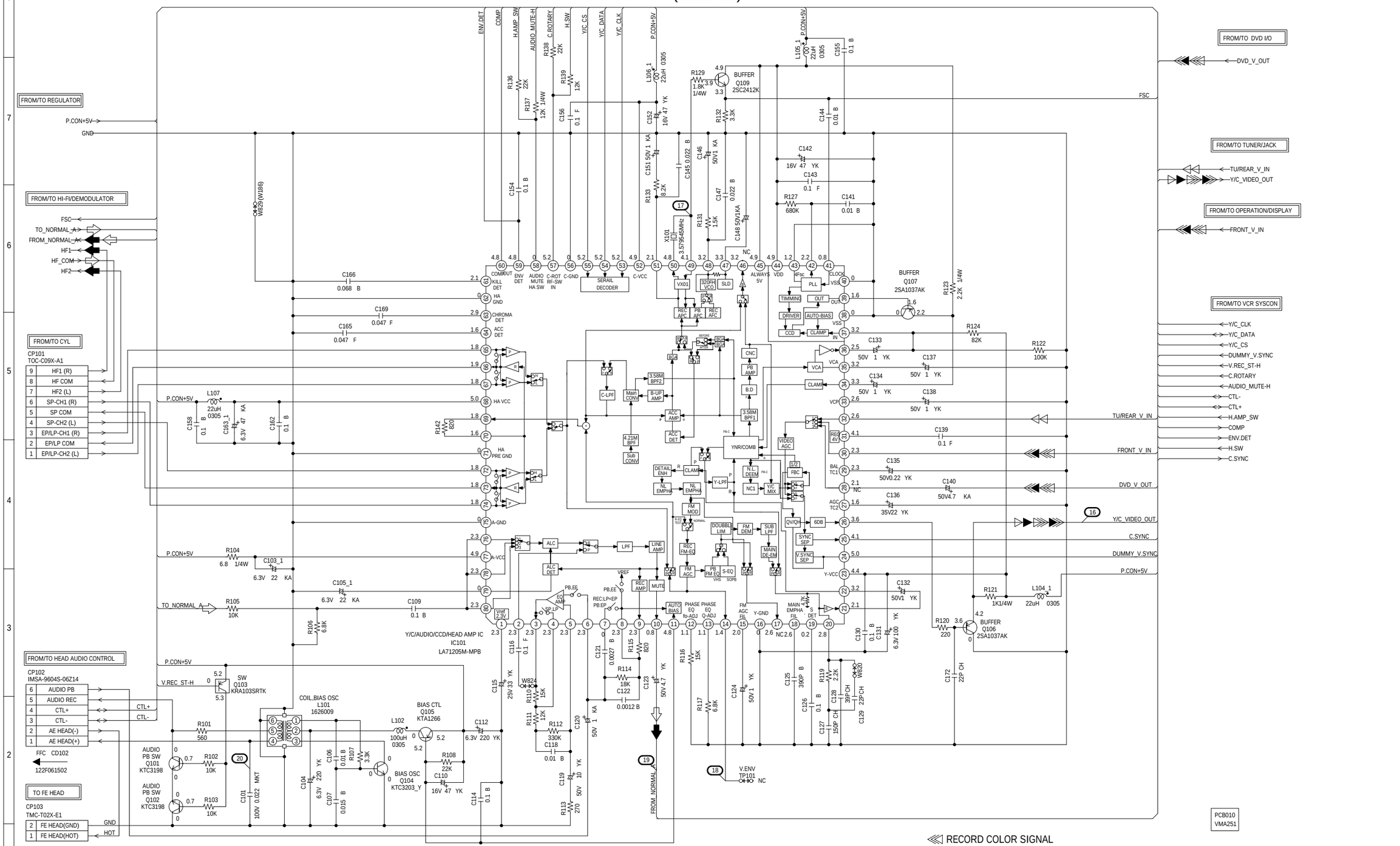
PCB130
VMA249

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

Y/C/AUDIO/CCD/HEAD AMP SCHEMATIC DIAGRAM

(VCR PCB)

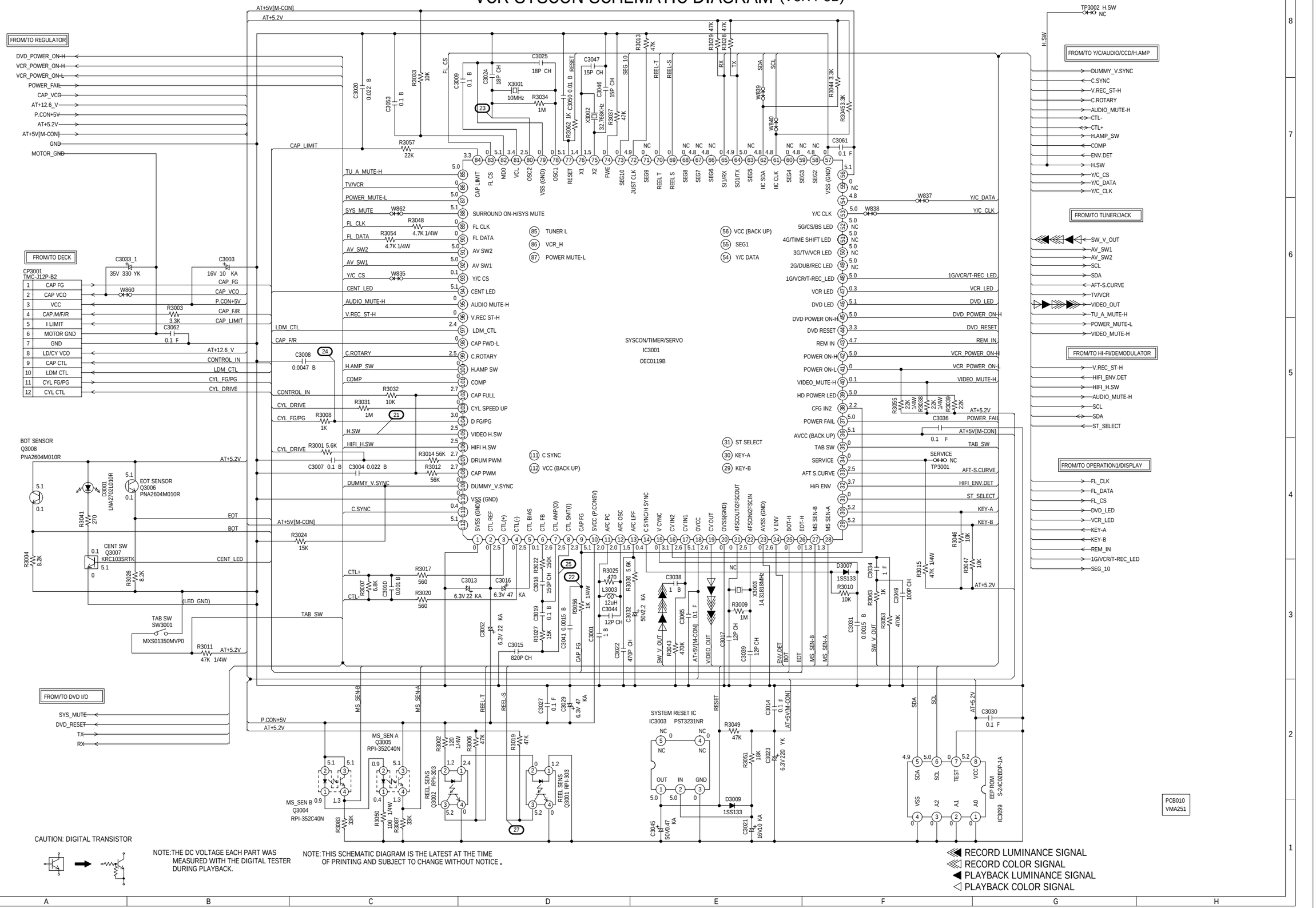


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

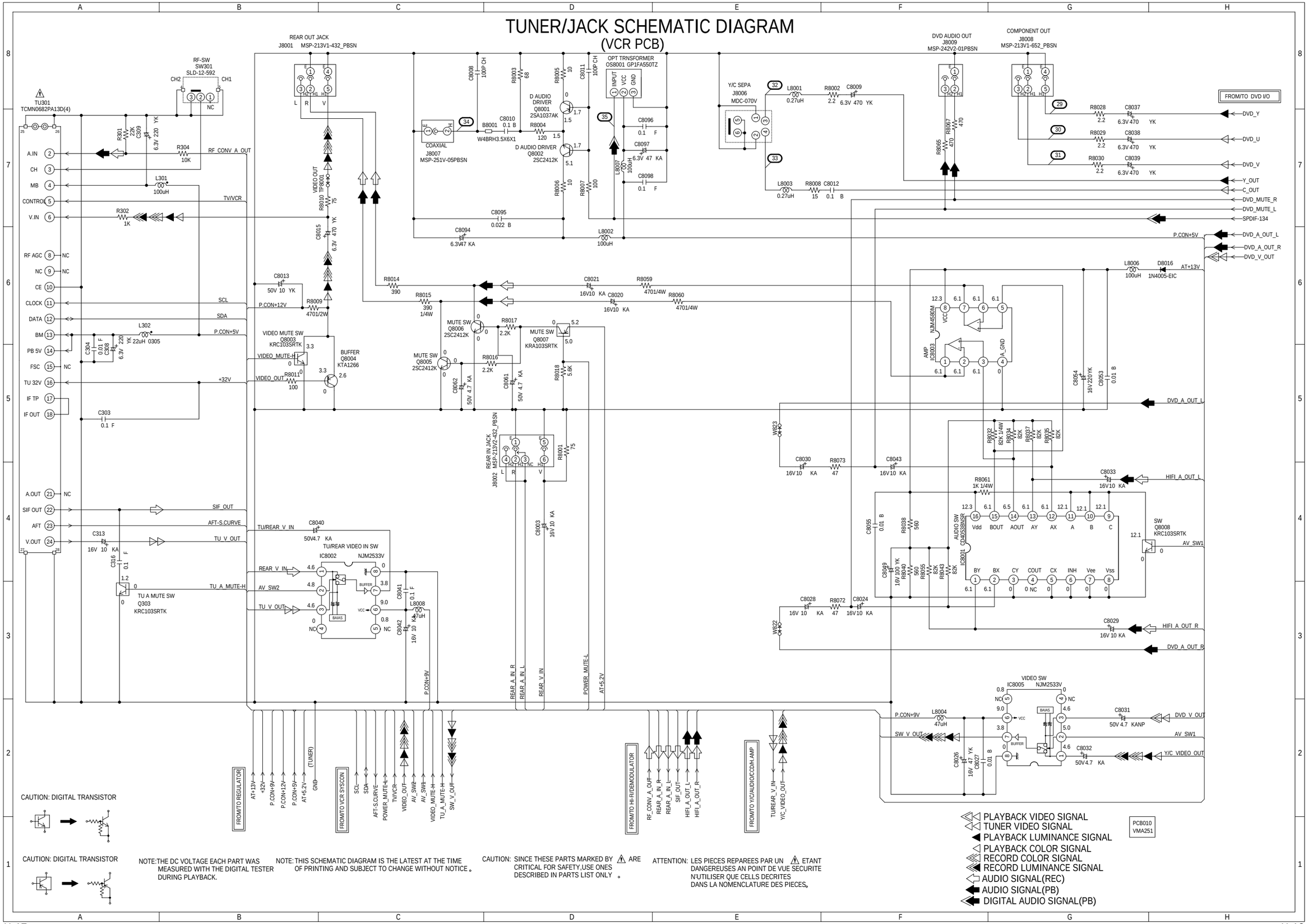
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR

VCR SYSCON SCHEMATIC DIAGRAM (VCR PCB)



TUNER/JACK SCHEMATIC DIAGRAM
(VCR PCB)



CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

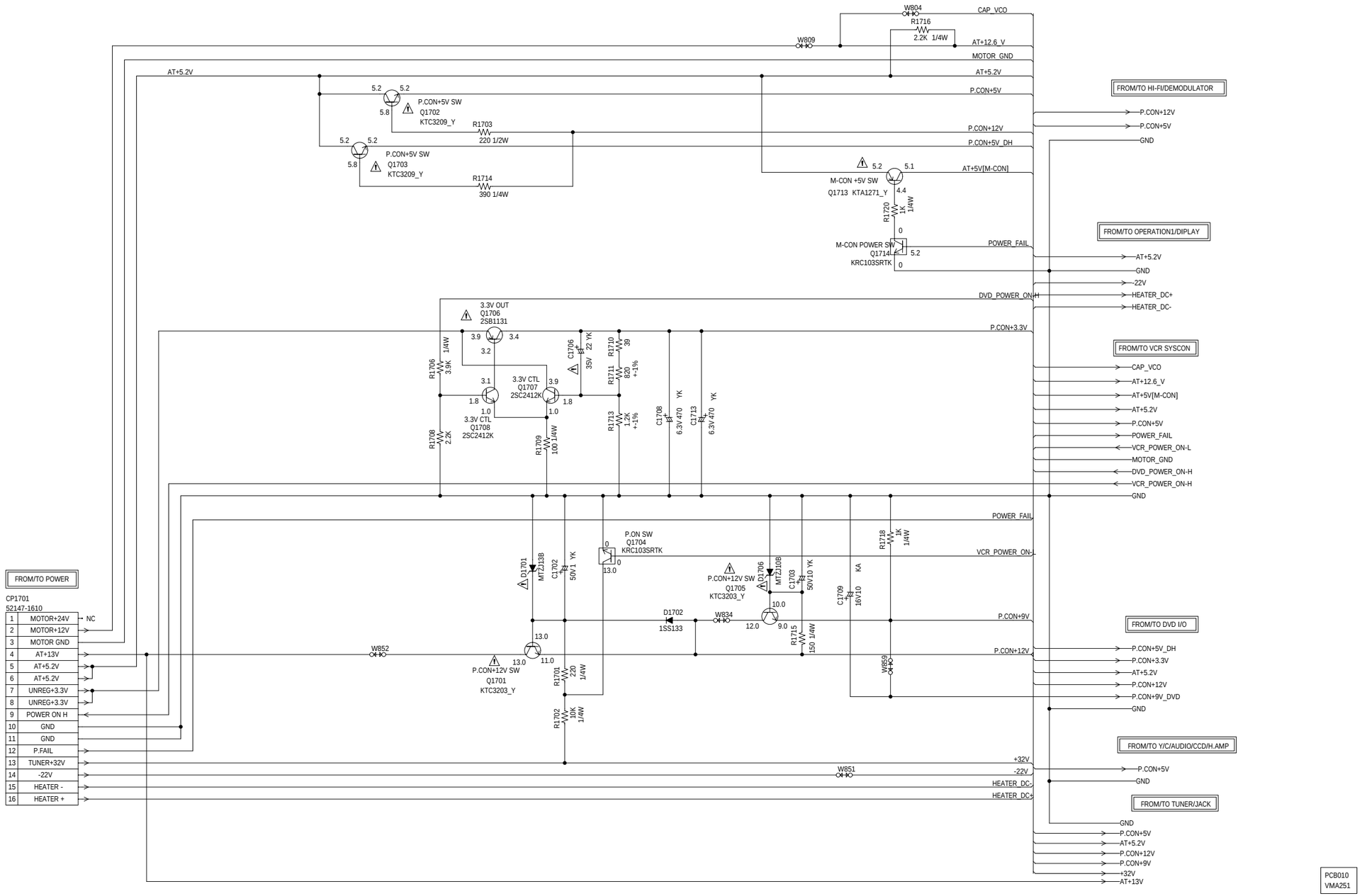
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

REGULATOR SCHEMATIC DIAGRAM
(VCR PCB)



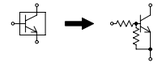
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

CAUTION: DIGITAL TRANSISTOR



OPERATION/DISPLAY SCHEMATIC DIAGRAM

(VCR PCB)

FROM/TO DISPLAY

CP652
IMSA-9604S-18Z14

1	FRONT V IN
2	GND
3	FRONT A IN L
4	GND
5	FRONT A IN R
6	GND
7	KEY-A
8	KEY-B
9	VCR LED
10	REM IN
11	AT+5.2V
12	GND
13	FL CLK
14	FL DATA
15	FL CS
16	HEATER DC+
17	HEATER DC-
18	-22V

FFC
CD652
2S0I0802

FRONT_V_IN
FRONT_A_IN_L
FRONT_A_IN_R
KEY-A
KEY-B
VCR_LED
REM_IN
SEG_10
FL_CLK
FL_DATA
FL_CS
HEATER_DC+
HEATER_DC-
-22V

Q653
2SB709A
35V 47 YK

0
5.2 5.1
FIP ON SW
Q667
KRA102SRTK

AT+5.2V

16/VCR/T-REC_LED

DVD_LED

FROM/TO OPE.1/OPE.2

CP651_2
IMSA-9604S-07Z13

1	NC
2	VCR LED
3	DVD LED
4	GND
5	AT+5.2V
6	KEY-A
7	KEY-B

FFC
CD651
2H072402

0
5.2 5.2
DVD/HDD LED SW
Q666
KRA103SRTK

W828

AT+5.2V
KEY-A
KEY-B

FROM/TO VCR SYSCON

FL_CLK
FL_DATA
FL_CS
DVD_LED
VCR_LED
1G/VCR/T-REC_LED
SEG_10
REM_IN
KEY-B
KEY-A

FROM/TO HI-FI/DEMODULATOR

FRONT_A_IN_L
FRONT_A_IN_R

FROM/TO Y/C/AUDIO/CCD/H.AMP

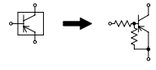
FRONT_V_IN

FROM/TO REGULATOR

-22V
HEATER_DC+
HEATER_DC-
AT+5.2V
GND

PCB010
VMA251

CAUTION: DIGITAL TRANSISTOR

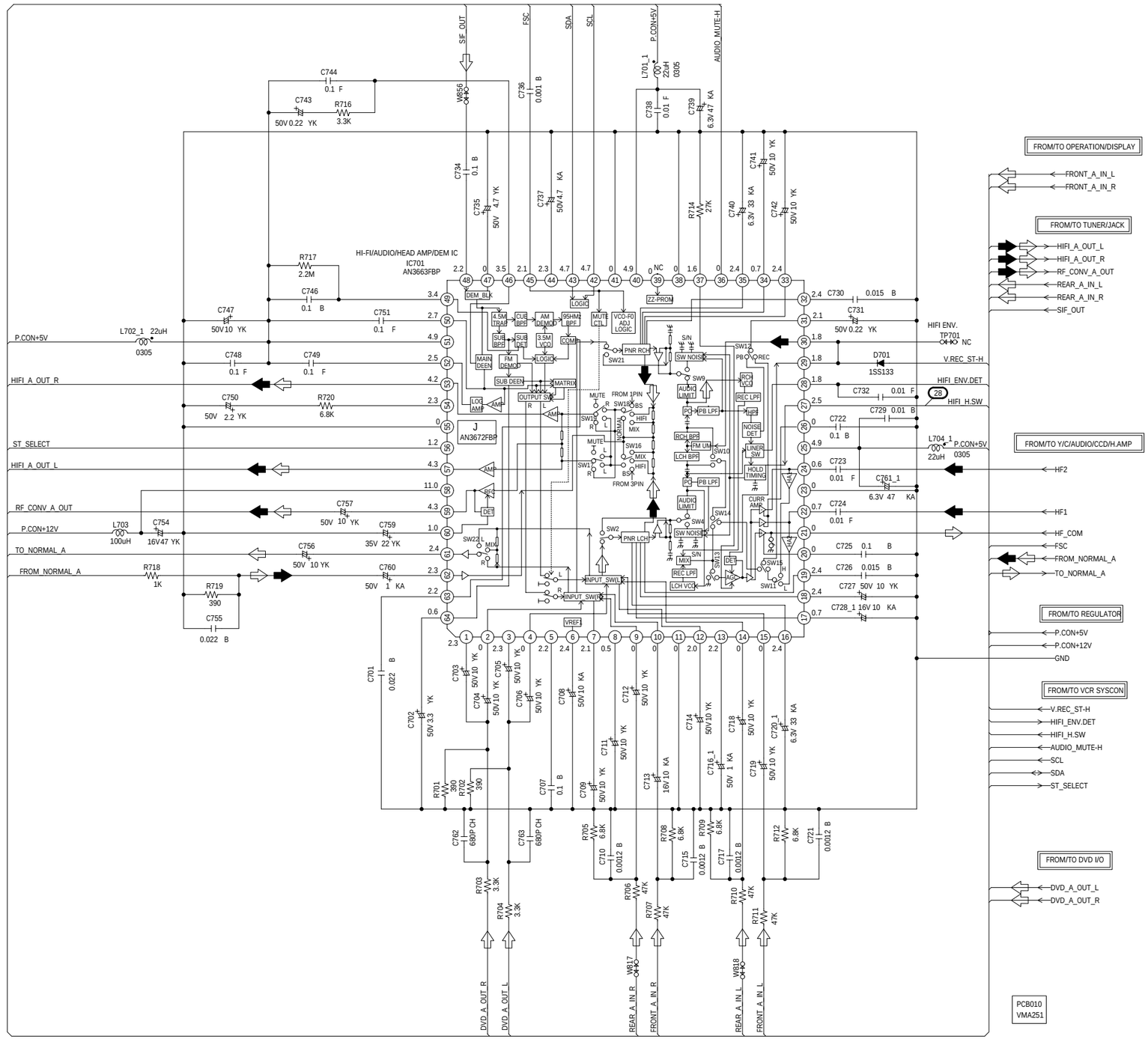


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

Hi-Fi/DEMODULATOR SCHEMATIC DIAGRAM

(VCR PCB)



NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

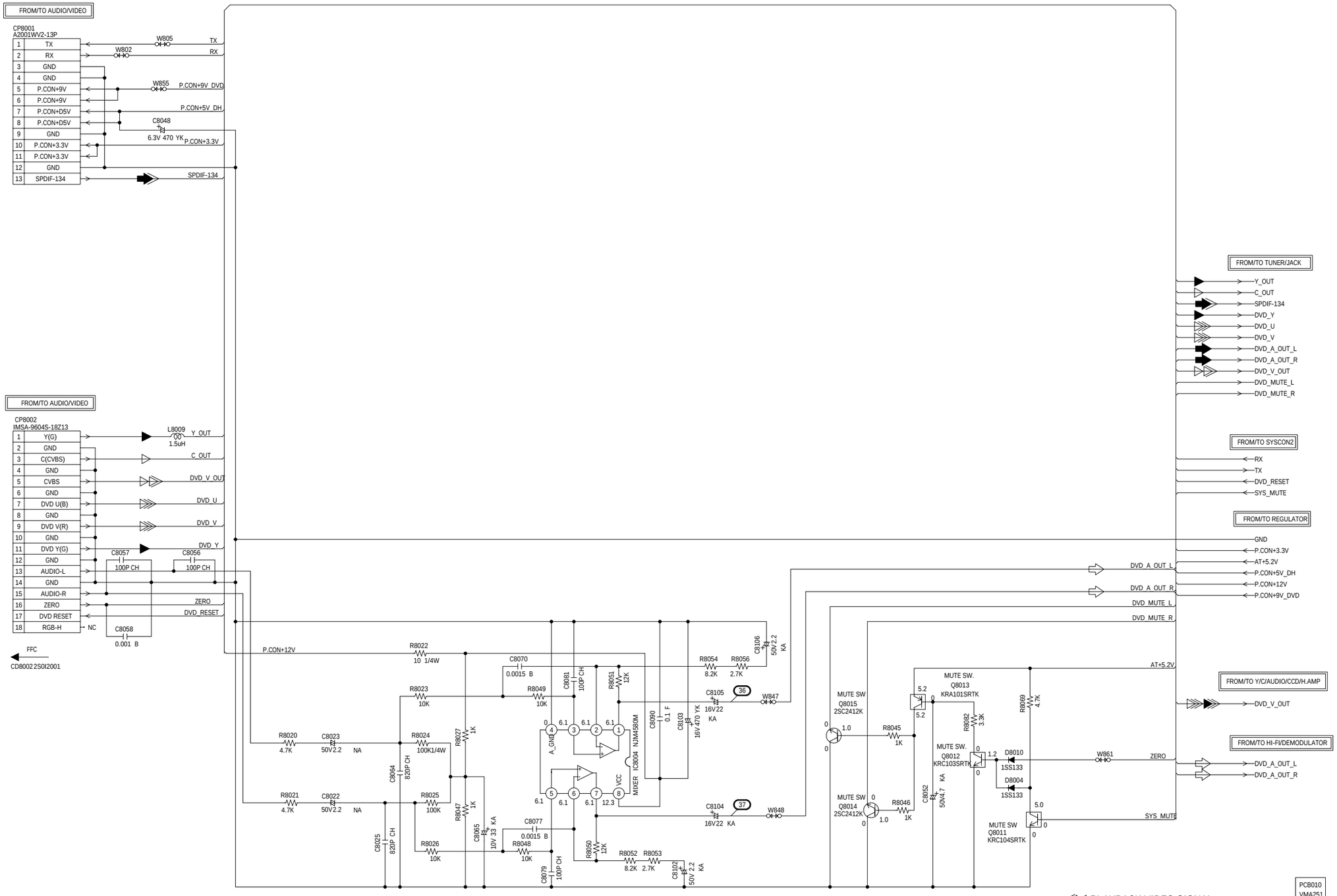
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

AUDIO SIGNAL(REC)

AUDIO SIGNAL(PB)

DVD IN/OUT SCHEMATIC DIAGRAM

(VCR PCB)



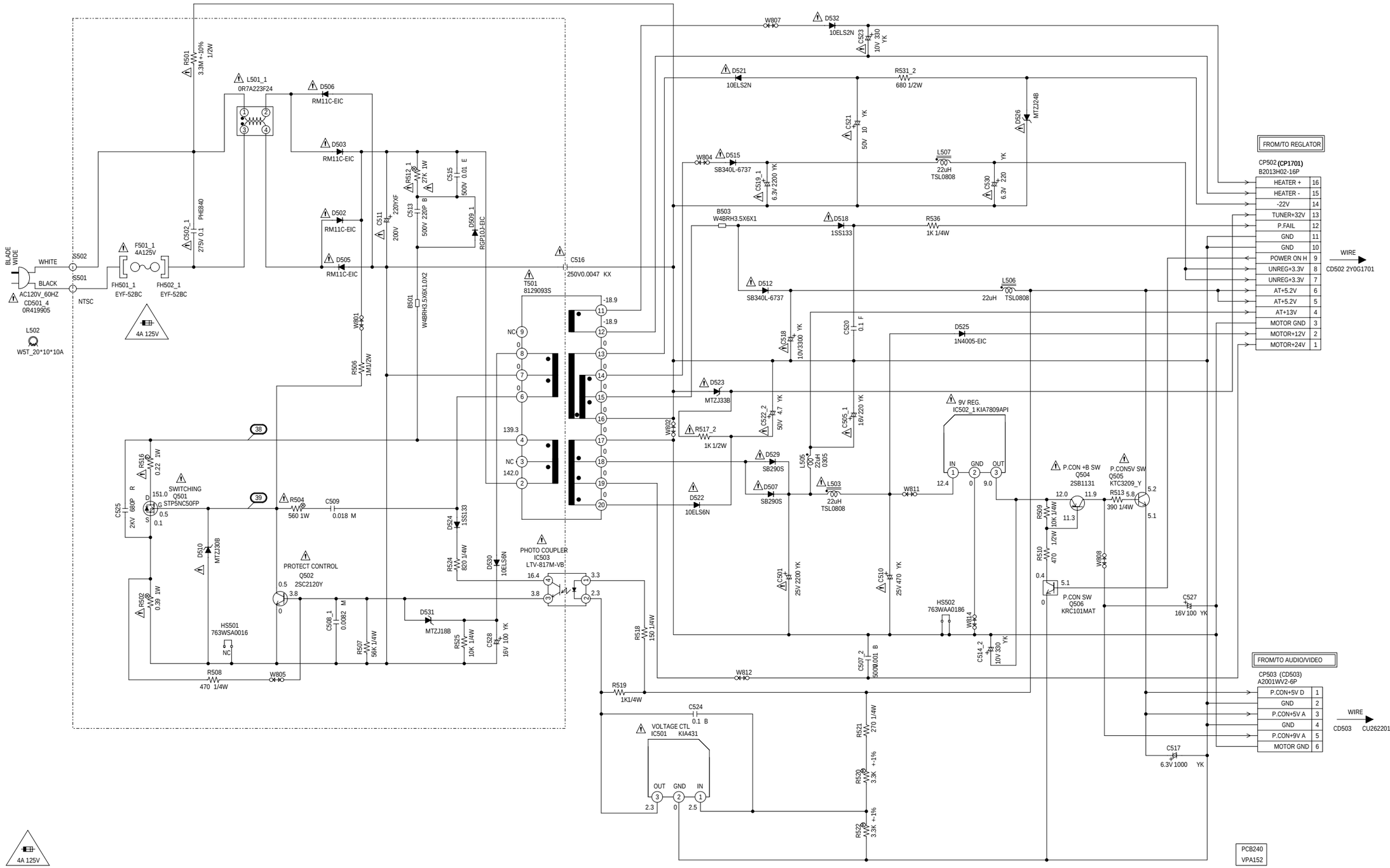
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

POWER SCHEMATIC DIAGRAM
(POWER PCB)



CAUTION:FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 4A 125V(F501).

ATTENTION:POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTOLISER QUE DES FUSIBLE DE MEME TYPE 4A 125V(F501).

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

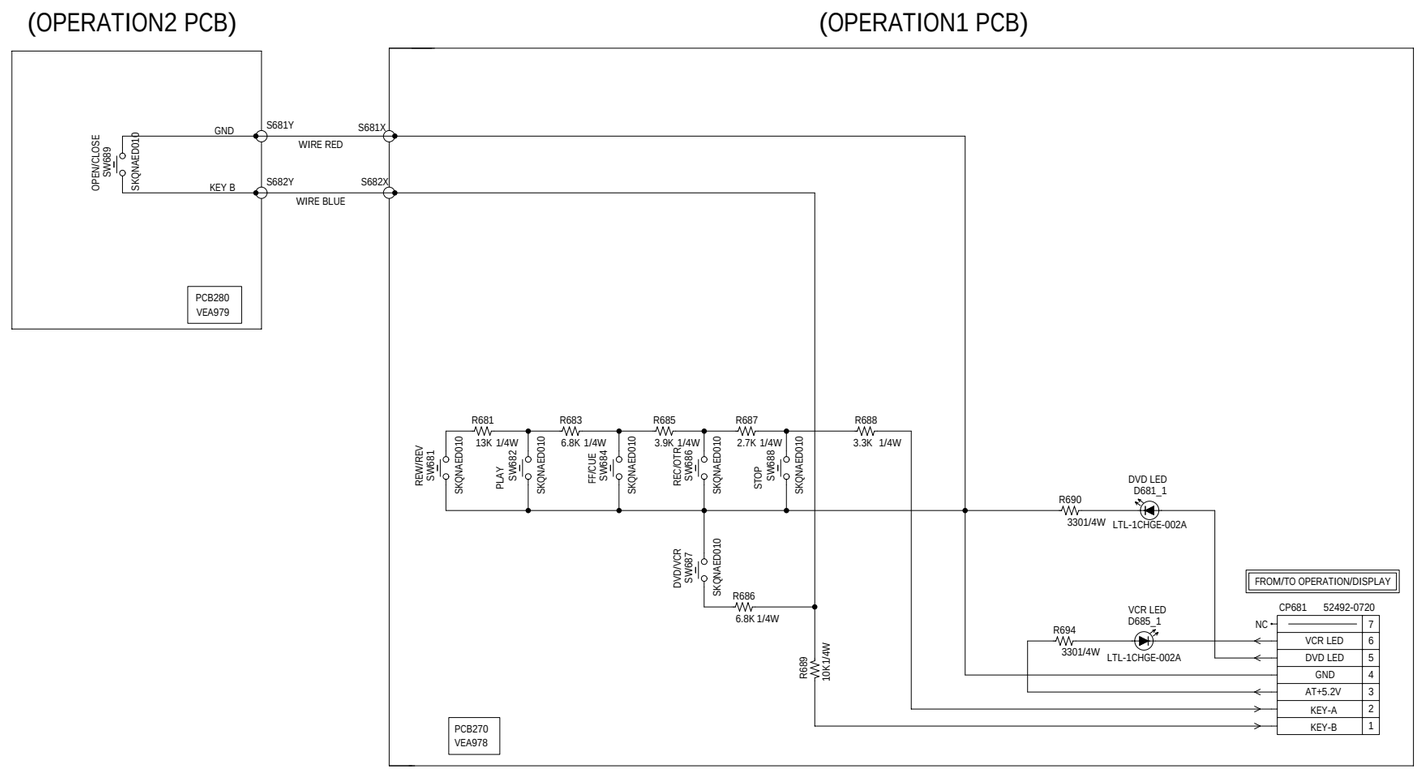
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR

OPERATION1/OPERATION2 SCHEMATIC DIAGRAM

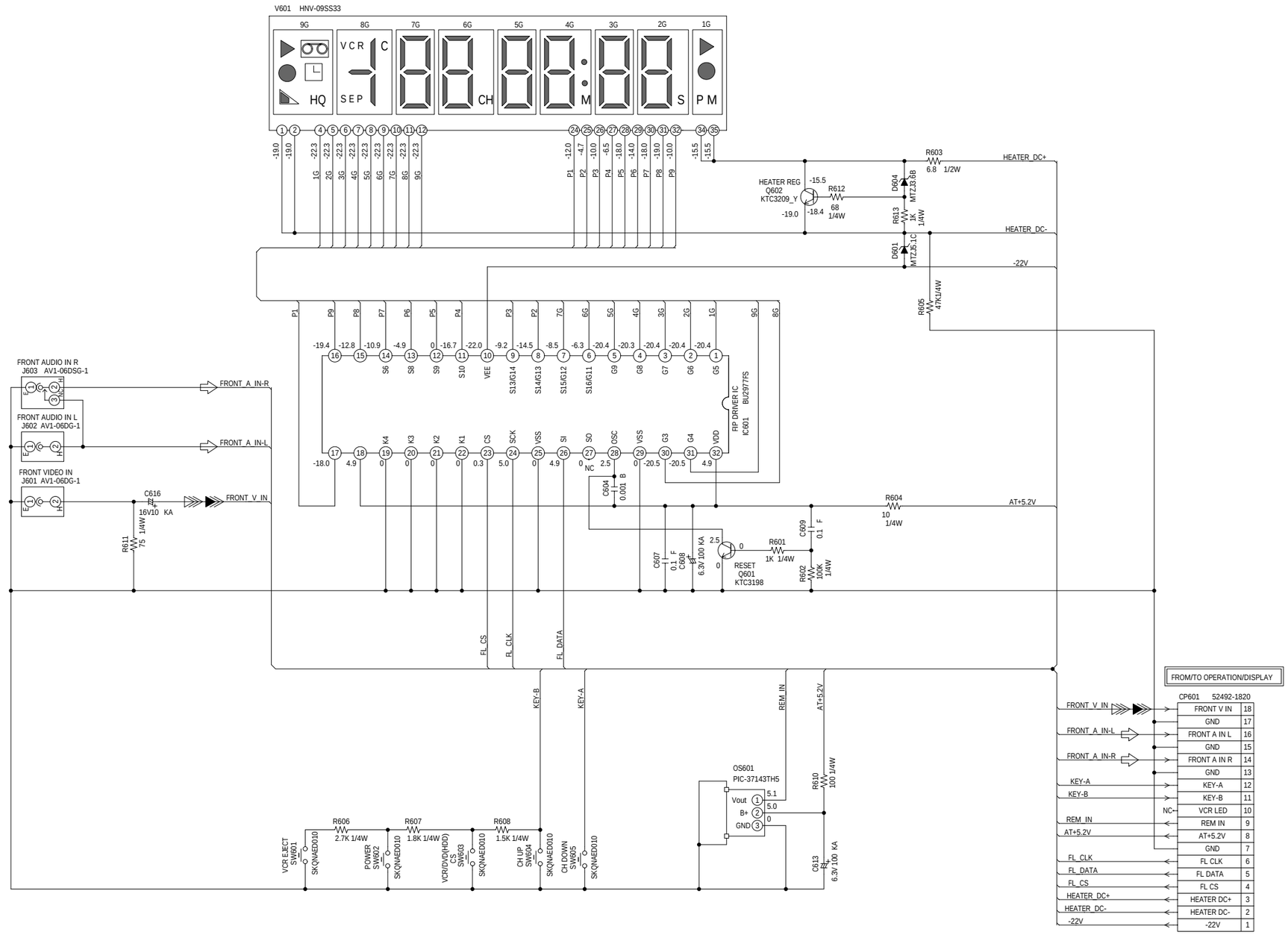


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

DISPLAY SCHEMATIC DIAGRAM

(DISPLAY PCB)



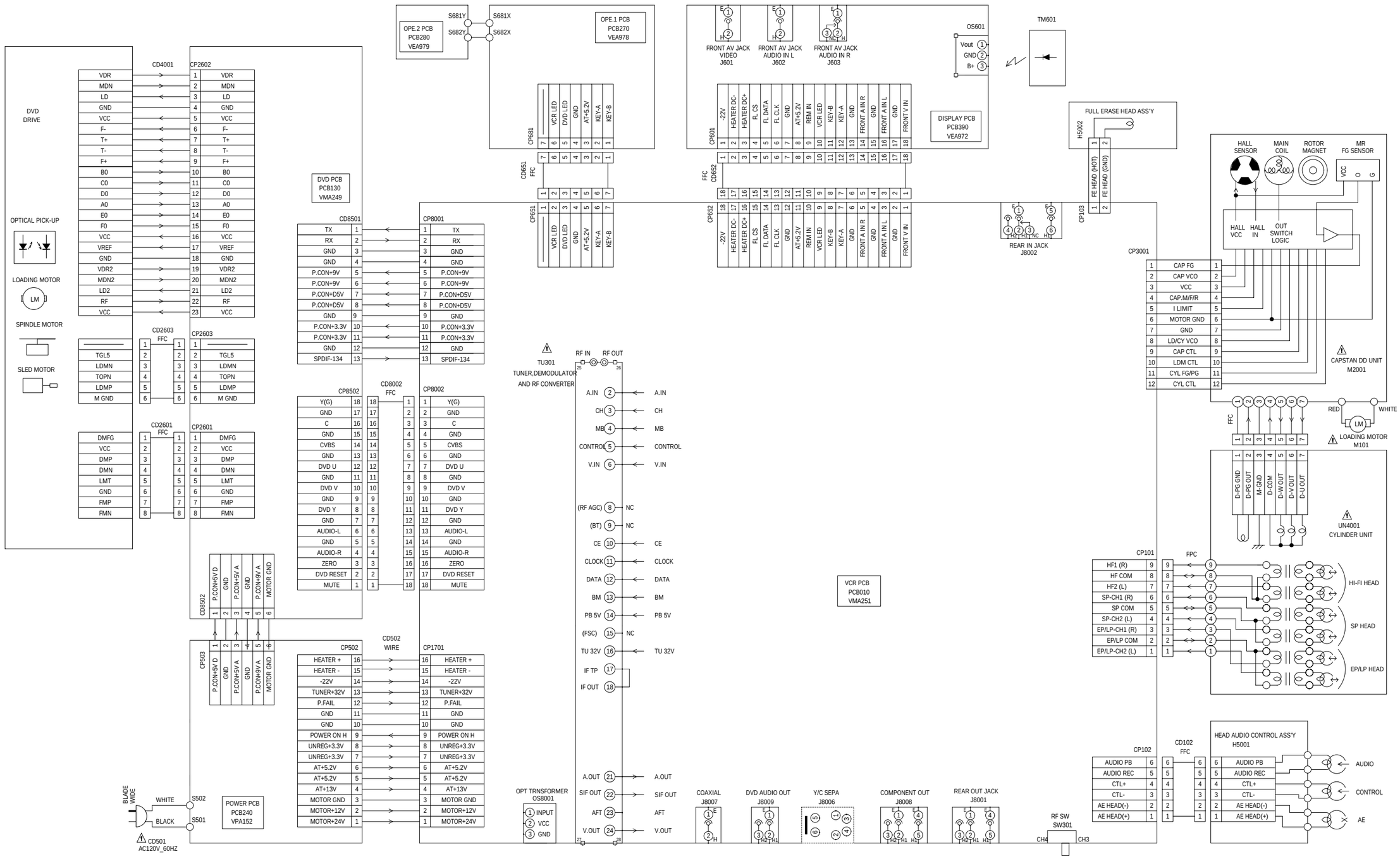
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL
AUDIO SIGNAL(REC)

PCB390
VEA972

INTERCONNECTION DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

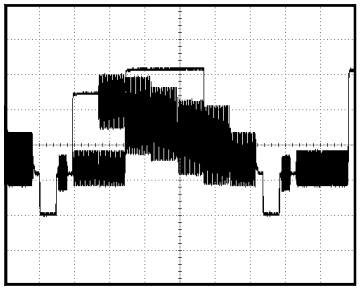
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

WAVEFORMS

Y/C/AUDIO/CCD/HEAD AMP

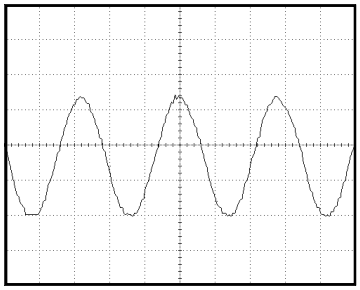
10µs
500mV

⑯



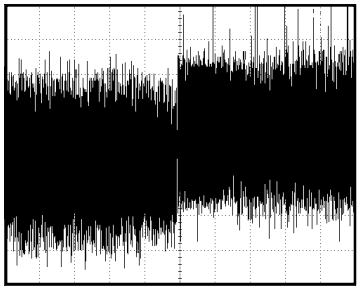
100ns
100mV

⑰



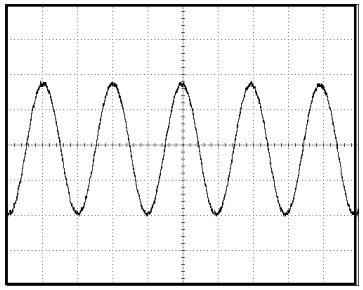
1ms
100mV

⑱



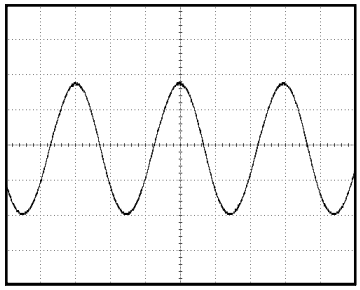
200ms
500mV

⑲



5µs
20V

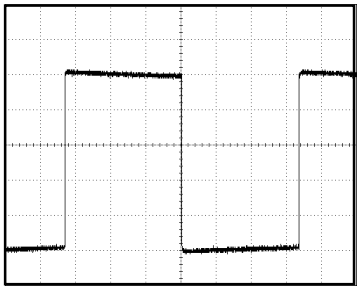
⑳



VCR SYSCON

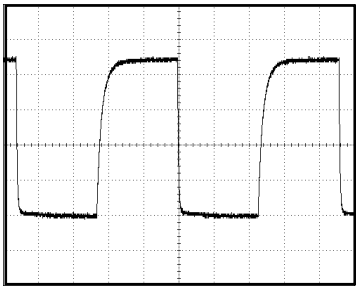
5ms
1.0V

㉑



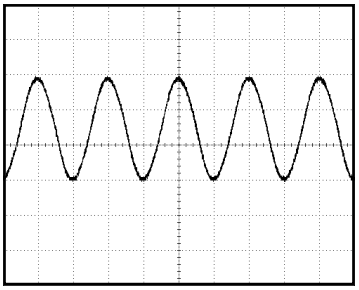
200µs
1.0V

㉒



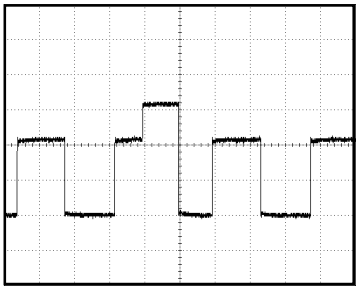
50ns
1.0V

㉓



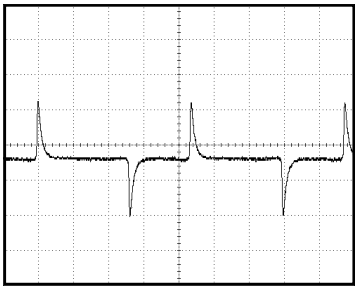
500µs
1.0V

㉔



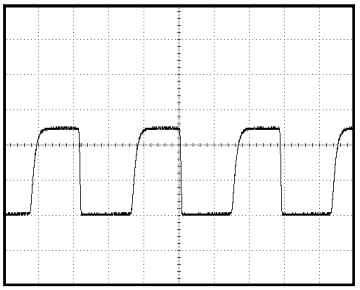
5ms
500mV

㉕



5ms
2.0V

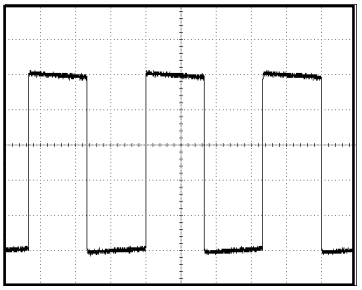
㉗



Hi-Fi/DEMODULATOR

10ms
1.0V

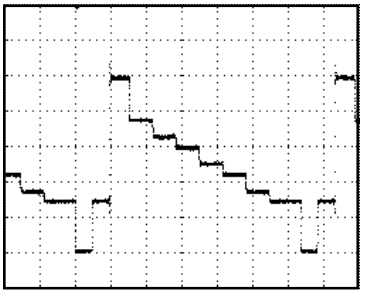
㉘



TUNER/JACK

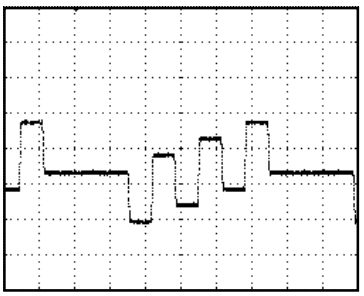
10µs
200mV

㉙



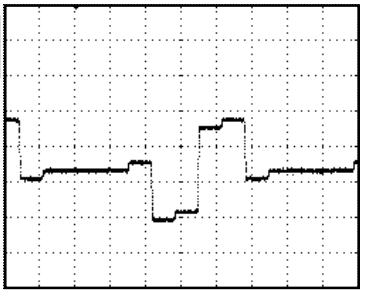
10µs
200mV

㉚



10µs
200mV

㉛

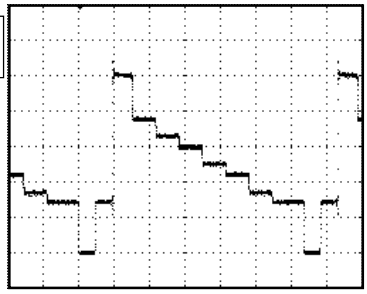


NOTH: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

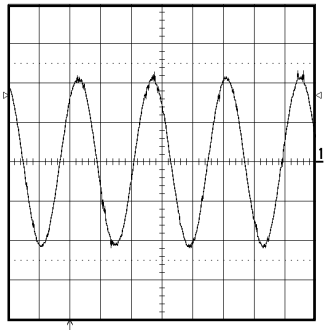
DSP

10µs
200mV



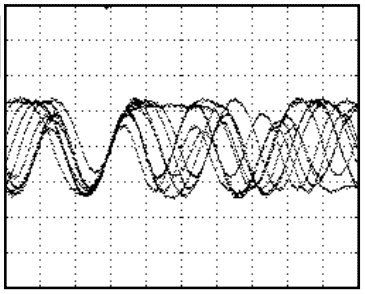
32

1 ms
100mV



37

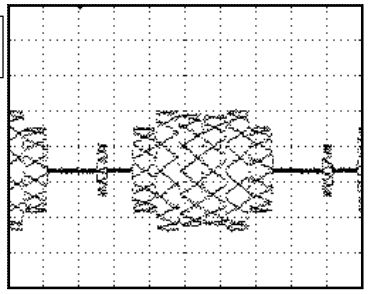
20ns
100mV



52

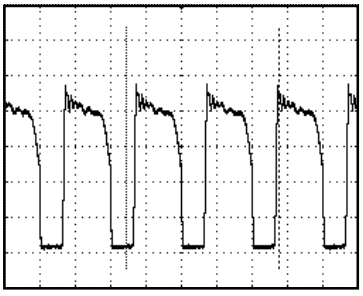
POWER

10µs
200mV



33

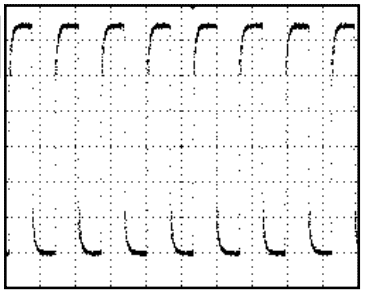
5µs
500mV



38

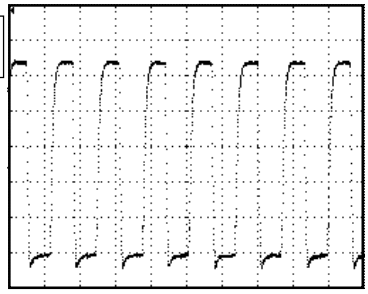
MPEG

500ns
50mV



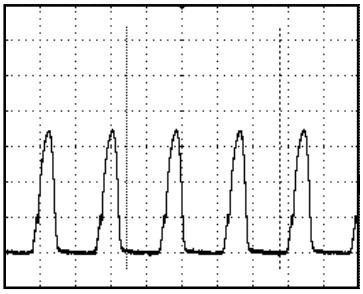
53

500ns
100mV



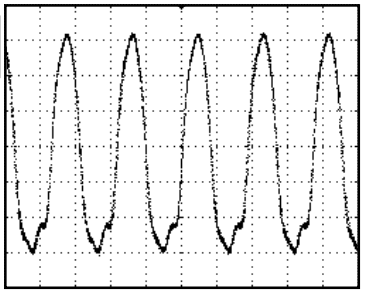
34

5µs
5.0V



39

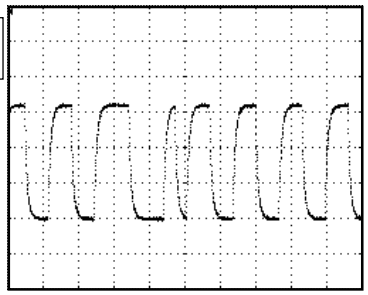
20ns
100mV



54

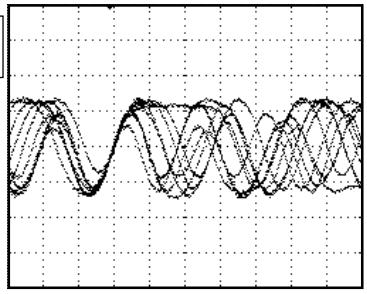
READ

500ns
1.0V



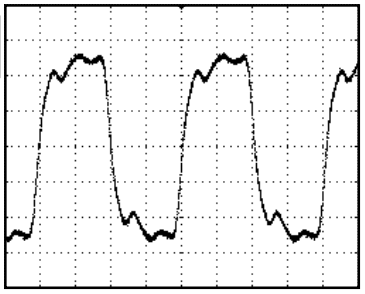
35

100ns
50mV



50

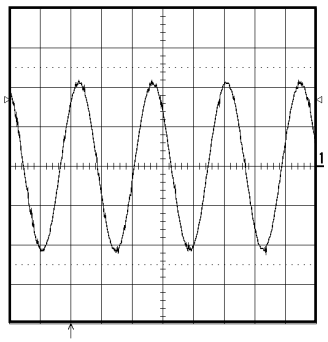
20ns
100mV



55

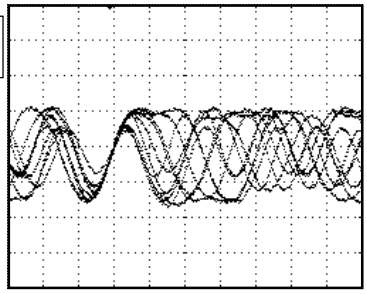
SOUND AMP

1 ms
100mV



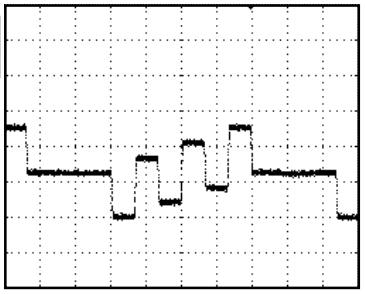
36

100ns
50mV



51

10µs
20mV



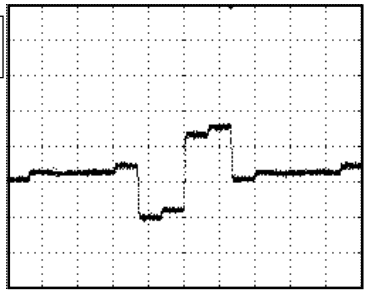
56

NOTH: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

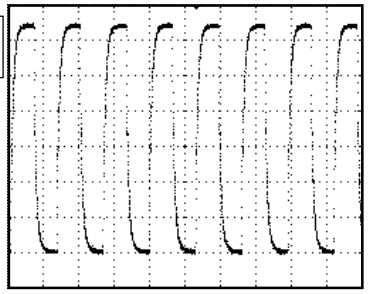
10µs
20mV

57



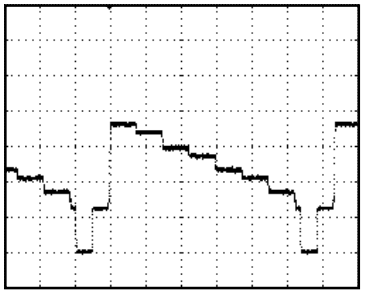
500ns
50mV

62



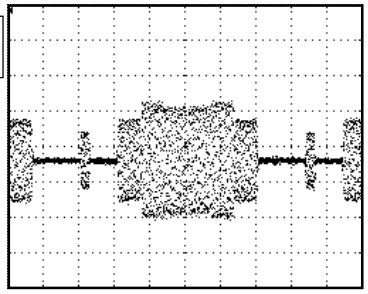
10µs
50mV

67



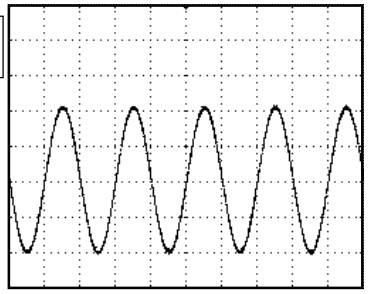
10µs
20mV

58



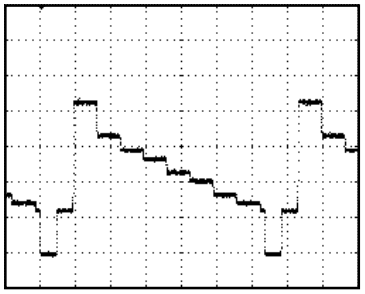
500µs
50mV

63



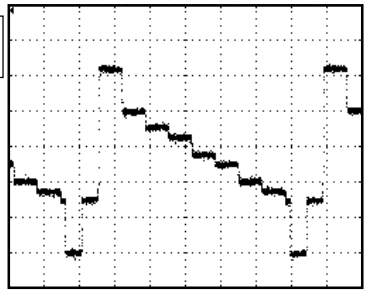
10µs
50mV

68



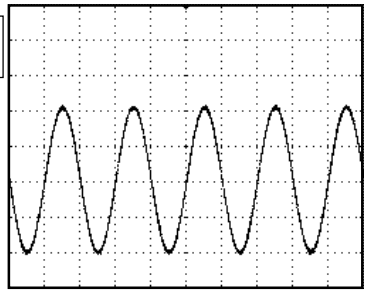
10µs
20mV

59



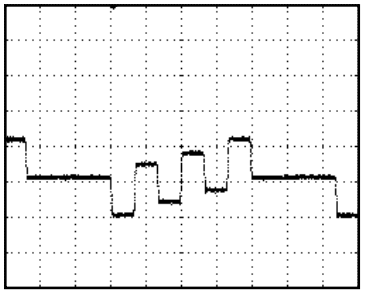
500µs
50mV

64



10µs
50mV

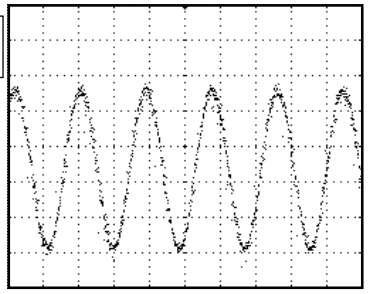
69



MEMORY

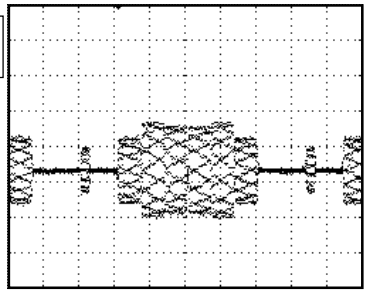
5ns
20mV

60



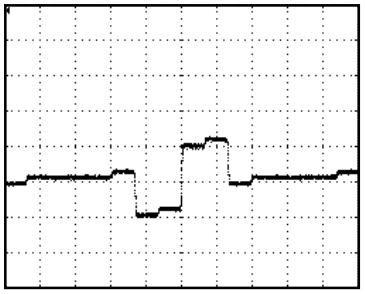
10µs
50mV

65



10µs
50mV

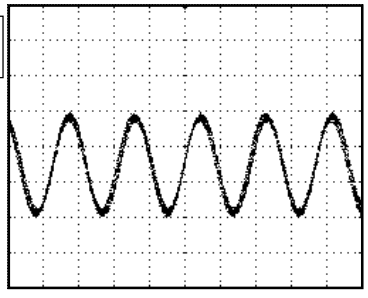
70



AUDIO/VIDEO

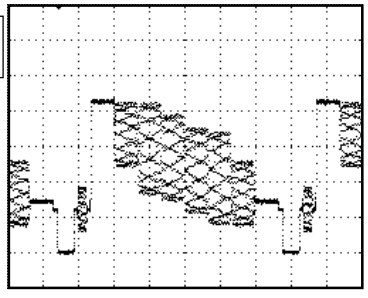
20ns
50mV

61



10µs
50mV

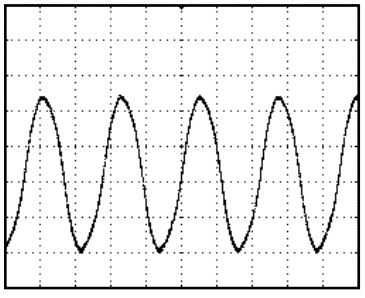
66



DVD SYSCON

50ns
100mV

71



NOTH: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN